The Iron A

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXIV: No. 3.

New York, Thursday, July 17, 1870.

\$4.50 a Year, Including Postage. Single Copies, Tex Cents.

The Weston Electric Light.

After a fierce and exciting struggle which has lasted for almost two years, and the preparations for which may be said to have occupied a paried of so years, and the preparations for which may be said to have occupied a paried of so years, and the preparations for which may be said to have occupied a paried of so years, and the preparations for which may be said to have occupied a paried of so years, and the preparations for which may be said to have occupied a paried of so years, and the pressure of the preparations for which may be said to have occupied a paried of so years, and the whole is held to green have no been realized. Much actual improvement has rewarded the efforts of recont investigators. The history of electric machines and electric laungs thows a season of the season of the last few years. During the latest of Paries is removed, and thus the beauter of Paries is removed, and thus the beauter of Paries is removed, and thus the beauter of Paries is removed, and thus the lighthouse he plates with the exceptions of many inventors, their promoters and admirately and interest machines and electric laungs thows a season of the paries of the paries of Paries is removed, and thus the possible was rediscovered, and much old ground was gone over. Recent progress has carried the lighthouse, into a large of years, and the whole is progress for the paries of the paries of Paries is removed, and thus the lighthouse, into a large of years, and the whole is held to get which also prevents the warring of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus the policy of the plates of Paries is removed, and thus

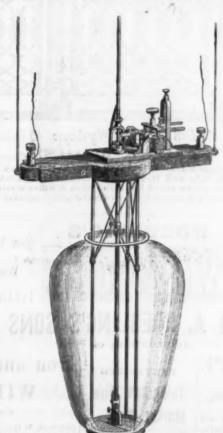


Fig. 3.- Electric Lamp and Regulator.



Fig. 1.—Weston's Dynamo-Electric Machine

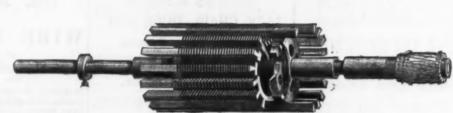


Fig. 2.—The Weston Armature.

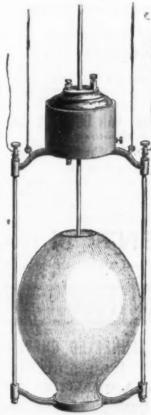


Fig. 4.-Electric Lamp.

WESTON'S DYNAMO-ELECTRIC MACHINE AND ELECTRIC LAMP.

may be made possible or more efficient. Quite a number of American electricians have sought success in this direction, the latest one on the list being Mr. Edward Weston, long and favorably known Edward Weston, long and lavorably known in connection with dynamo-electric machines for gold, silver and nickel plating. Mr. Weston, who has for years been quietly experimenting on electric illumination and the construction and adaptation of machinery to this and has of late come before the public with the fruits of his labors—a perfected dynamo-electric machine and an improved

dynamo-electric machine and an improved electric lamp, both of which we illustrate.

As usual with improved machinery, the present shape of Weston's dynamo-electric machine (see Fig. 1) is the outgrowth of a long series of experimental inquiry. The stationary magnets are arranged in a horizontal position, which are connected by vertical bridges; the horizontal flanges permit a few machines of the machine of a firm support to the foundation of the ma-chine. Between the stationary electro-magnets revolves a circular armature, to which motion is transmitted by belt and pulley, the latter being partly visible in Fig. 1. The clearance between the electro-magnets and the rotating armature is made by accuracy of the construction of the machine to fall as the rotating armature is made by accuracy is afforded to regulate its intensity. Mr. of the construction of the machine to fall as Weston has introduced an arrangement low as 1-32d to 15th of an inch, according to for obtaining a number of independent circuits from one machine, which are utilized

of light, the cheapest and most efficient mode is the employment of electricity. There are, besides, numerous special cases where considerations other than that of which, in a strong current, effectually the end of the employment of electricity. The upper carbon is immovable, being firmly that it can be shifted at will, an arrange ment which is necessary in introducing a following circular:

Washington, July 11, 1879.

The upper carbon it attached by a hanism is inclosed in a casing, as shown economy may dictate its use. Into this keeps the temperature of the machine with-category we may place many large indus-trial establishments in which night work imum temperature of 120° F. is reached after 3 to 4 hours' continuous work at high speed, and that this limit is not exceeded speed, and that this limit is not exceeded even after the machine has been at work 10 to 12 hours. The poles of the stationary magnets are rigidly held apart by curved brass braces (see Fig. 1) which, at the same time, afford the bearings for the armature shaft. The binding posts are arranged upon the upper curved pole—in our illustration there are only two, as the machine (Fig. 1) is only a single-light machine. With multiple circuits a correspondingly (Fig. 1) is only a single-light machine. With multiple circuits a correspondingly larger number is required. The commutater brushes, which are made of copper, silver-plated, are mounted on an oscillating collar (see Fig. 1) loosely slipped on the armature shaft, to which it can be firmly armature shart, to which it can be firmly attached by means of a set-screw. The range of oscillation of the plate is such that the brushes may be moved from the point where the current collected by them from the commutator is of the minimum intensity. to the point where the current so collected will be of the maximum intensity. It is possible by this means to decrease the current transmitted to a lamp, until it almost approaches extinction, so that a ready means afforded to regulate its intensity. the size of the machine. The commutator and commutator brushes will be seen in the for the generation of a number of powerful for the generation of a number of powerful the core of the electro-magnet is hollow and the core of the various electric

similar clamp to a heavy brass rod, the weight of which tends to produce actual the points once determined upon is maintained by an automatic brake, controlled by an electric magnet. It will be seen from center of which the carbon holder passes. From this disk clutch two sharp points project downward into a cup, the inner surface of which is turned into the shape of a cone. Now, it will be readily understood that as soon as the end of the forked lever is depressed the disk hinge is opened, because the projecting points strike the conical or sloping inner surface of the cup. This releases the hold of the clutch upon the rod, which slides until the descent is stopped by a tightening of the clutch. The motion of the lever opersimple forked lever, depressing the forked end. This releases the clutch and allows the carbon holder to descend until the proper

the in Fig. 4.

the Hitherto the carbons used in connection contact between the two points. This is with the Weston light were molded by hand, prevented, or rather the distance between and, though they were dense and uniform, their shape was not true, as a longitudina tained by an automatic brake, controlled by an electric magnet. It will be seen from Fig. 3 that from a forked lever are suspended two small rods, which are attached to the use of improved appliances, which pended two small rods, which are attached will permit the manufacture of carbons of to a hinged clutch of disk shape, through the of texture and increased density. When the latter is great, the rate of consumption is, of course, smaller, and the greater ac and delicacy of movement is called for in the regulator mechanism. Mr. Wes-ton now compresses a finely divided mix-ture of gas retort carbon and a small quantity of material destined to increase its adhesiveness, by a powerful hydraulic press into the shape of six-inch cylinders. The downward, approaching the carbon points latter are introduced into a strong cylinder, which can be heated by steam. The material, thus rendered plastic, is forced ating the clutch is controlled by an electromagnet (see Fig. 3). As soon as the carbon points are too far apart the power of the electromagnet is decreased, which relieves the armature attached to the other end of the simple forked lever, depressing the forked and This releases the clutch and allows the temperature in black lead and The temperature in black lead crucibles. The carbon rods thus obtained are dense and distance between the two points is estab-lished. An essential point in connection with the regulator is the arrangement that

to the Australian exhibitions at Sydney and Melbourne will receive definite information in regard to the transportation of goods by addressing Mr. R. W. Cameron, of New York, or Mr. Henry W. Peabody, of Boston, the Commissioners for the United States appointed by the Australian government to pointed by the Australian government to provide for the reception and transfer to the colony of the intended exhibits. Under Mr. Peabody's direction Ar bark Conquest will sail on July 15. Other vessels are now loading at Lewis Wharf, Boston, for various ports in Australia, freig placed at the lowest rates. in Australia, freights having been

There are no differential duties, and all exhibits will be admitted free of duty. The Executive Australian Commissioner, P. A. Jennings, has issued a circular containing the following, which is reproduced for the information of the United States exhibitors: "Owing to unforeseen delays in the early stages of the exhibition, the notice given has in some cases left scarcely sufficient time to prepare exhibits and transmit them to Sydney for the opening in September next. Under these circumstances the Commission will receive exhibits up to the time of the closing in March, 1880, and can arrange with the Victorian Commissioners to have them sent on in time for the opening of the Melbourne Exhibition in that year.

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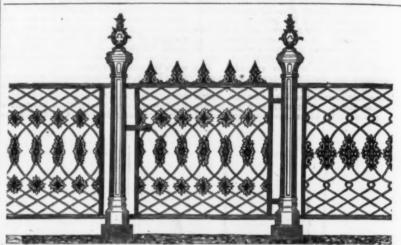
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BY WM. B. CALDWELL, JR

(Concluded.)

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1 foundry iron (coke) of good quality:

Iron, per cent..... Slag, &c....

plained on the supposition that molten iron absorbs a large quantity of carbon, say 3 per cent., and, on cooling slowly, the greater part of this crystallizes out. On this assettled by future investigation in regard to sumption the carbon is all combined, or part of this crystallizes out. On this assumption the carbon is all combined, or partly combined and partly amorphous, in the molten metal—most probably it is all combined—for sudden cooling will, in some combined—for sudden cooling will, in some is the control of the surface of the fact remains, and I think it can be safely stated. cases, give a metal showing only combined carbon. It has long been a favorite theory with many eminent metallurgists that the condition of the carbon in iron is greatly influenced by the temperature to which it has beev subjected presented by the temperature to which it has beev subjected presented by the temperature to which it has beev subjected presented by the temperature to which it has beev subjected presented by the temperature to which it has beev subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected presented by the temperature to which it has been subjected by the temperature to which it has been subjected by the temperature to whic ture to which it has beev subjected pre-vious to casting, they claiming that white iron will be changed to gray if melted and heated to a point considerably above melt-ing. In this theory the mysterious influence is "superheating," and the temperature at the time of casting is not considered. It seems to me, however, unnecessary to seek some unaccountable agency to explain the fact that the same iron may be gray or white, according to the manner of casting, when we have the plain and simple reason that sudden cooling prevents the separation of graphite. The question of heating far beyond the melting point, producing gray iron, is to my mind merely a question of giving such a heat that the iron is not ready to chill immediately on touching the mold, and therefore the temperature at the time of casting is important, while any previous overheating can have no effect. This same theory is even carried into the blast furnace practice, with the statement that high tem-perature there produces graphite iron by some peculiar effect of heat on the carbon a very unnecessary hypothesis, since we know that high temperature gives highly silicious metal, and that silicon causes

graphite to separate. Gray iron is a mixture of steel and graphite, the steel being a sponge or net-work inclosing the graphite, and this exwork inclosing the graphite, and this explains the character of gray iron and the difference between gray, mottled and white, for we may consider gray iron as a low steel, inclosing graphite; mottled iron a higher steel, inclosing less graphite; white iron a very high steel, with no graphite. Now, as before mentioned, in proportion to the carbon combined with iron, it is more fusible, more brittle and harder, and we fusible, more brittle and harder, and we know gray iron is less easily melted, is softer and tougher than either mottled or white. These properties render it especially suited for castings, because when cast it is soft enough to be worked easily with cutting enough to be worked easily with cutting tools, being also stronger than the other grades. Another peculiarity of gray iron is that when it cools down to the point of hard-ening it sets suddenly and slightly expands,

thus filling the mold well.

Mottled Iron—is so called from the appearance of its fracture, which shows gray specks in a white ground. It contains usually less elicion the ground. specks in a white ground. It contains usually less silicon than gray iron, and also less carbon, the combined and graphitic being about equal in true mottled. Owing to a larger percentage of combined carbon, mottled iron is harder, more fnsible, and more tled iron is harder, more finsible, and more brittle than gray, and shrinks, instead of expanding, when east. It has a peculiar property of passing through a pasty condition when melting, which adapts it especially for puddling, otherwise very little use could be made of it. This iron is made at lower temperatures than gray iron, and is less improper and therefore with those substances. pregnated therefore with those substances which enter by reduction; but it always contains more sulphur, because the furnace, being much colder, the pyrites of the coke is not decomposed high up in the furnace, and because it is not possible to carry a heavy burden of lime on a cold fur-nace for fear of scaffolding. If the lime were in excess, it would carry off sulphur in the slag as sulphide of calcium; but this is still ore true of white iron.

White Iron—is usually the result of a colder furnace, and contains less silicon and colder furnace, and contains less silicon and carbon than either of the others, which carbon is all "combined," and more sulphur. In fact, sulphur tends to prevent iron absorbing much carbon, and also to the formation of white iron. White iron may, however, be owing to the presence of manganese, in which case the carbon is high, usually 5 per cent., when manganese is as much as 20 per cent. The hardness, brittleness, lack of strength, and contraction on cooling, render white iron unfit for castings; cooling, render white iron unfit for castings; but melting easily, and passing through a pasty condition, it is well adapted for pud-

dling.

The more important discussion of the combined action of some of the impurities already mentioned brings up intricate ques-tions; but there are some plain facts to be noted.

Carbon and Silicon .- In cast iron these

duction of silicon is greatest in the blast furnace when the temperature is high, and this is also favorable to a highly carbonized metal, and as some metallurgists say, to the production of a graphitic metal; but I think it is clear that the separation of the graphite in the cast iron is not owing directly to a high temperature in the furnace. It seems that silicon and carbon replace each other to a certain extent; but a high percentage of silicon generally occurs with a high percentage of carbon, and, on cooling, this carbon separates out as graphite, in proportion to silicon percentage, so that very silicious metal, as silver gray, contains almost exclusively graphitic carbon. Why silicon The carbon is partly "combined" and partly graphitic, the latter largely predominating as a rule in No. 1, and the two forms becoming more equally divided in the lower grade down to IV and "mottled," in which they are nearly equal; then, as the iron becomes white, the combined form predominates, graphite being absent in "white" iron, the "lowest" of the grades. There is something peculiarly interesting in this division of the carbon, not only from a scientific standpoint, considering the chemical combination of a few hundredths or tenths of I per cent. of carbon with the iron, and the separation of crystallization out of the remainder in the form of graphite, but also in a practical view, as this behavior of the carbon very materially affects the character of the metal, as will be shown further on. The cause of this division, or two forms of carbon, is easily understood and explained on the supposition that molten iron absorbs a large quantity of carbon carbon, is easily understood and explained on the supposition that molten iron absorbs a large quantity of carbon carbon, or lastly, and very probably, to the action of silicon, preventing a sudden contraction at the moment of solidification. This fact of sudden contraction, whether by

ing.

3d. That any iron containing less than r per cent. silicon will give white metal by sudden cooling, whether it be cold-blast charcoal iron or the commonest silver gray

coke metal refined. Pig iron containing (No. 1) silicon, 4.06; graphite, 2.98; combined carbon, 0.23; gave refined silicon, 0.21, metal with graphite trace; combined carbon, 2.45; and many experiments gave similar results. These instances are sufficient to show that the use of cold-blast chercoal iron is not necessary to get a metal which will give a perfect chill, and surely lend additional weight to the and surely lend additional weight to the other arguments in favor of the idea that silicon causes carbon to separate out as graphite. This may seem, at first sight, of but little practical moment, and yet it is of the greatest importance to one of the large industries of the country, viz., car-wheel manufacture, and the manufacture of chilled castings generally, besides the importance it has for "rolls," &c. For car-wheels, an iron is necessary that will give a hard surface when cast against iron, and a soft, strong body where cast against sand. For this, a metal containing about I per cent. of silicon is necessary, and that is just about what we find in the high priced cold-blast

what we find in the high priced cold-blast irons. Now, by refining them, the commonest, cheapest irons will answer the purpose. This is the subject of a patent taken out lately in this country, but has been in use for many years in Germany, where they refine for "rolls," and chill casting, as at Königshütte, in Silesia, where I saw, five years ago, the operation constantly conducted of refining eight tons at a heat in about eight. refining eight tons at a heat in about eight In this connection, there has been much discussion as to the cause and peculiarity of this property, which some irons possess, of giving a hard, white surface, or "chill," when cast against iron. Among other reasons assigned, a third form of carbon has been

signed, a third form of carbon has been said to be the cause; but this third form of carbon has been found in this quality of iron (as it seems to me) merely because combined carbon was high. Treatment of carbon residue from solution of iron in hydrochloric or dilute nitric acid, and finding a substance which burns or volatilizes below redness, does not prove the existence of a third form of car-bon. Carbon may be deposited in an amorphous form when iron containing only commore dilute the acid, and the slower the action, the more of this amorphous carbon will be left; so that a solution in dilute hydro-chloric acid, with the aid of a galvanic current, is even used by no less an authority than Prof. Bunsen, to obtain the carbon from iron, which carbon is then burned and carbonic acid weighed. A stronger acid would evolve more hydrogen, which, in its nascent state, would tend to carry off carbon as carbureted hydrogen; but it rarely bon as carbureted hydrogen; but it rarely happens that a simple solution in acid re moves all of the combined carbon, and of course the greater the quantity of combined carbon in the iron, the greater the amount of amorphous carbon left. Again, even in the mild steels, with only 0.12 carbon, it is well known that, in making color tests, the nitric acid used (1.22 specific gravity) rapidly dissolves the steel, but leaves a floculent carbon residue, which must be dissolved by longer standing at 144° F. This residue is combined carbon, left when the acid discombined carbon, left when the acid dis-solved the metal; and if the steel is very high, say 1.5 per cent. carbon, this residue, on one decigram, will be very consider-able, but it will be entirely dissolved by two to three hours' standing at 144 degrees.

Now, chilled iron is really a very high steel, and it seems to me that, in order to establish the theory that "chilling" is due to this third form of carbon, it must be present in any combination of iron and carbon which will perceptibly harden by sudden cooling, for steels, as well as cast irons, contain graphite and combined carbon, provided the

graphite and combined carbon, provided the cooling be very slow.

Chilling is not at all strange in itself; but it is as yet a mystery why silicon prevents it.

The hardening or crystallization takes place Carbon and Silicon.—In cast iron these in the most natural manner; in a plane pertwo substances occur in large quantities, usually nearly equal in gray iron, which contains about 3 per cent. of each. The reshoots out in a plane perpendicular to the

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lowering also the percentage of phosphorus and sulphur. Being made by squeezing together small particles of iron, of course the mass is never homogeneous, and when rolled out, consists of bundles of fibers, separated by films of slag. But there are two kinds of wrought iron known in commerce, "fibrous" and "granular," the former being the truer "wrought iron," and the latter approaching steel the differ. and the latter approaching steel, the difference in carbon being that the fibrous con tains less than the granular. The fracture may, however, give false indication of the nature of the metal, for a good smith can bend a granular iron so as to show fiber, or break a fibrous iron so as to appear granular. In fact, the quality of the blacksmith often has as much to do with the working of an iron as its quality; but he cannot make the iron strong after it is worked. Bad iron is the result of one or several of many causes. The purest iron may be spoiled by burning or overheating, although such pure iron will stand more heat than impure irons. This "burning" is, in my opinion, not only removal of carbon, but oxidation of the metal, for if it were merely re-moval of carbon the iron would be softer. moval of carbon the iron would be softer instead of more brittle. There is also a change of molecular structure, of course. The iron "pile" or "packet" is put into a heating furnace, and soon oxidizes sufficiently to be covered with a scale. This iently to be covered with a scale. This scale, or oxide of iron, gives up part of its oxygen to carbon, taking up oxygen again from the air, and the carbon thus oxidized passes off as gas; but at the same time it is undoubtedly true that, at this intense heat, oxygen also goes to the metal, and, gradually passing in, soon renders the most porou parts of the mass brittle by forming oxide of iron, which is disseminated through the mass. Therefore, the less dense the metal the more readily "burned."

There are two kinds of brittleness in iron, the one called "cold-shortness," or brittleness when cold, and the other "red-shortness," or brittleness when hot. As a rule the two do not occur in the same metal, but if the red-shortness be caused by burning, or bad puddling, leaving the iron green or or bad puddling, leaving the iron green or badly balled, the result will be an iron both red and cold-short. Red-shortness is generally caused by sulphur, of which but a few hundredths of one per cent. will cause cracking in the rolls; but, on cooling, this brittleness will not exist. Cold-shortness is generally owing to phosphorus, which may be as much as half of one per cent. without greatly injuring the iron, provided it has been well puddled, so as to make the carbon low. Such an iron will work smooth and low. Such an iron will work smooth and well in the rolls, but will be somewhat brittle when cold, and this brittleness will be greater the higher the carbon. A theory generally held by ironmasters has been, that a mixture of red and cold-short iron world rive a strong pour metal, but only would give a strong neutral metal; but only in so far as dilution affects it is the theory true. Five hundred pounds each of two irons, the one containing one-half per cent. phosphorus, and the other three tenths per phosphorus, and the other three-tenths per cent. sulphur, will give a metal with a quarter per cent. phosphorus and fifteen hundredths per cent. sulphur. Puddling will still further purify it, and the result will be a good iron. But phosphorus and sulphur do not neutralize each other. The purification of iron by puddling should be more closely considered than it is at present; for, by properly conducted and careful work, it is possible to remove 60 per cent. at least of the phosphorus and sulphur. For this result the iron should be "bled"—that is, the slag run off before "balling." That iron may be still further purified by puddling is undoubtedly true; for, in some experiments made with Mr. J. M. Duncan, of the Roans Iron Company, Chattanoogs, we puddled a heat of Icoo pounds of an iron

Steel.—Under this heading it will be necessary to be brief, although the subject would admit of extensive treatment in detail; but our State is as yet without steel industries. As has been said before, it is difficult to say what steel is, for it is now made lower in carbon than even good wrought iron, or containing almost as much carbon as cast iron. Owing to its crystalline structure, iron. Owing to its crystalline structure, steel bears less percentage of impurities than iron can safely carry, i. e., leaving carbon out of the question. By impurities, then, we mean phosphorus and sulphur, and the amounts of these which may be present depend largely on percentage of carbon, and also on the use to which steel is to be put. pand largely on percentage of carbon, and also on the use to which steel is to be put. Phosphorus in small quantity, say one quarter of one per cent., does not prevent steel working well, provided the carbon be low; but when cold, such steel is decidedly brittle, unless carbon be at least as low as 0.25 per cent. and manganese should be up to 0.60 per cent. Manganese acts in more than one way advantageously to steel. It prevents, to a great extent, boiling and blowholes, by its tendency to check the oxidation of carbon during casting and while the metal is setting in the molds; it also renders less active the oxidizing tendency of the heating furnace, which would cause redshortness; and although manganese itself renders steel harder and more brittle, it neutralizes, to a certain extent, the cold-short action of phosphorus.

In working steel with 0.30 per cent, phosphorus, 0.25 per cent, carbon, 0.80 per cent.

phorus, 0.25 per cent. carbon, 0.80 per cent. manganese, 0.03 to 0.05 per cent sulphur, I have found that it was soft, and gave ex-FRANCIS WISTER,

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have found that it was soft, and gave excellent results under a steam hammer or on an anvil, cold bars 1 inch square bending completely over on themselves and sustaining repeated blows from a sledge; but the

surface from which it begins. If we cast from a chilling iron or high steel an inch square bar, in an iron mold, the planes of crystallization will run in to the center, forming distinct diagonal lines. The bar will be smaller than the mold, showing that there has been considerable contraction; the metal will be intensely hard, and the carbon all combined.

Wrought Iron.—The impurities are much less in this form of iron than in cast iron. It is made from cast iron, and the process, called puddling, removes silicon, and reduces carbon down to about 0.2 per cent, lowering also the percentage of phosphorus and sulphur. Being made by squeezing tosurface from which it begins. If we cast same worked hard in the blooming rolls cooling action of a chilling surface, producing sudden contraction, and this causes carbon to remain in the combined form, while the rolls are slower in their action, and graphite tends to separate out.

Early History of Pig Iron Manufacture in Scotland.

An interesting sketch of the early history of pig iron manufacture in Scotland has been published in a recent report by Mr. Richard Meade, Assistant Keeper of Mining Records for Scotland. While in England Records for Scotland. While in England and Wales the earliest authentic record bearing on the production of pig iron is for 1740, the introduction of the manufacture, into Scotland does not appear to reach further back than 1750. In this year the first furnace was erected at Bunawe, in Argylshire, by a Mr. Ford; in this furnace the blast was impelled by water power obtained from the river Awe, the ore employed being brought from Ulverstone, in Lancashire, while for fuel, charcoal alone was employed. while for fuel, charcoal alone was employed, with the aid of cold blast. The Bunawe furnace, now known as the Lorne, is still in operation, the proprietors being Messrs. Harrison, Ainslie & Co., who continue to Harrison, Ainslie & Co., who continue to make charcoal pig iron from time to time, according to the supply of charcoal obtainable. Previous to the year 1783 there appears to have been a similar furnace erected at Goatfield, also in Argylshire, and it is recorded that the yield of the Bunawe and Goatfield furnaces amounted to 1400 tons, or 700 tons per furnace. In these early furnaces at Bunawe and Goatfield charcoal pig iron alone was manufactured. The production of coke or coal pig iron dates from the year 1760, when the first blast furnace was put in operation at the Carron Ironworks, in Stirlingshire, where for some time was put in operation at the Carron Iron-works, in Stirlingshire, where for some time charcoal was employed. Very soon, how-ever, the powerful blowing machinery in-vented by Smeaton in the same year, was successfully applied and was the most com-plete of its kind then in use. The blowing machinery referred to consisted of four cyl-inders 4 feet 6 inches in diameter, exactly fitted with pistons and so-contribed that the inders 4 feet 6 inches in diameter, exactly fitted with pistons, and so contrived that the strokes of the pistons, being made alternately, produced an almost uninterruted blast. The pumps were worked alternately by means of a powerful water-wheel, which had four cranks upon its axis, each of which moved the piston of a cylinder through its stroke of 4 feet 6 inches. The great advantages secured by Smeaton's invention enabled the ironmasters to consume the hard dense coke in the furnace, which the hard dense coke in the furnace, which the ordinary bellows previously in use was unable to effect; an increased yield of the furnace was the result; hitherto it was from 10 to 12 tons per week, now it rose to 40 tons in the same period, and on the average 1500 tons of pig iron were made per The site of Carron was selected on

ount of the abundant water supply and the immense deposits of ironstone, coal and limestone in the immediate vicinity of the village. It was in the immediate neighborlimestone in the immediate vicinity of the village. It was in the immediate neighborhood of Carron that James Watt, in association with Dr. Roebuck, erected his first steam engine, the patent for which was secured in the year 1769, and in that year, too, the first carronade, the invention of Gen. Melville, was cast at Carron Foundry, from which, indeed, the new form of cannon derived its name. The manufacture of carronades was long the specialty of the dling is undoubtedly true; for, in some experiments made with Mr. J. M. Duncan, of the Roane Iron Company, Chattanooga, we puddled a heat of 1000 pounds of an iron with 0.90 per cent. phosphorus, and produced muck bar with 0.03 per cent. This would, however, scarcely be economical puddling for ordinary work, and yet, for boiler plate, would be far cheaper than "sinking" with charcoal.

Steel.—Under this heading it will be necessary to be brief, although the subject would our State is three cupola furnaces; four boring mills, for boring guns, pipes, cylinders, &c.; smiths' forges for making large anchors and anvils, as well as small work of various kinds; a forge for making malleable iron, a plating forge, and a forge for stamping iron, the harmor and hely of which were both the hammer and helve of which were of cast metal, and weighed 11/2 tons. ron acquired its reputation for the pig iron made at the works, and for the extent, variety and excellence of its foundry products. It preceded all other iron works in Scotland in the manufacture of malleable

iron. Succeeding the Carron Works, the next important seat of iron manufacture in Scotland sprung up at Wilsonstown, or Cleugh, in the Upper Ward of Lanarkshire, near the boundary of Midlothian. It was here, about the year 1774, that the brothers Wilson, merchants, engaged in the Swedish iron trade, commenced to develop the coal description of the district and soon effortured. iron trade, commenced to develop the coal deposits of the district and soon afterward established a foundry. This was succeeded in the year 1780-81, when the works were further extended by a blast furnace, the Messrs. Wilson putting their first in operation, and some years later, in 1787, blowing in a second furnace. An extensive forge was subsequently added to the already extensive works, and when, in the year 1708, Mr. John Wilson became the sole proprietor, the forge was increased, and in the year 1804 a. forge was increased, and in the year 1804 a rolling mill was erected.

In the year 1787 some gentlemen in Glas

gow entered into a copartnership, and erected some very extensive iron works at

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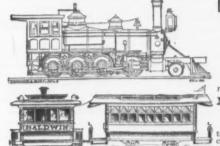
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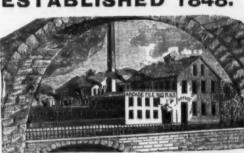
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2000 acres of coal and ironstone. The works still exist, and the iron there manufactured has a high reputation. It is stated that very early in its history it became famous for its bar iron, which was little, if at all, inferior to Swedish iron. In the year 1700 there were two blast furnaces at these 1795 there were two blast furnaces at these works, in which year 2878 tons of pig iron were made. In the year 1788 the Omoa Works in Lanarkshire, which were dismantled only a few years since, commenced operations. a few years since, commenced operations. In the same year the Clyde Ironworks, near Glasgow, were projected by the Messrs. Edington & Co. These latter works have been rendered famous by being associated with two names celebrated in the metallurgical industries of Great Britain—the one Mr. David Mushet, the other Mr. James Beaumont Neilson. The first named entered these works as accountant in the entered these works as accountant in the year 1792, when he was 19 years of age, and remained till the year 1800. In the followremained till the year 1800. In the following year, while engaged in the projection of the Calder Ironworks, in association with Mr. William Dixon, Sr., of Govan, Mushet made the discovery of the blackband ironstone, which in subsequent years exercised such an important effect in promoting the prosperity of Scotland in her metallurgical

and associated industries.
In 1788 the pig iron production of Scotland was 7000 tons, of which 1400 tons were charcoal iron. In 1796 it had reached 16,086 tons (of which only 900 tons were charcoal pig), made in 17 furnaces, which were distributed as follows: 4 at Carron, 3 at Clyde, 2 each at Wilsonstown, Muirkirk, Omoa and Devon, and I each at Goat-

kirk, Omoa and Devon, and I each at Goat-field and Bonawe.

In 1792 Messrs. Roebuck and Longridge built the Devon Iron Works, in Clarkmannanshire, to which a special interest attaches. These works originally had three blast furnaces cut out of the solid rock and lined with fire-bricks, and provided with the largest air chamber ever used in an iron-works. This chamber was also excavated out of the solid rock. It appears that at these works, between the years 1848 and 1854, the late Mr. Alexander Christie labored most assiduously to accomplish the 1854, the late Mr. Alexander Christie labored most assiduously to accomplish the utilization of the gas produced in a furnace using raw coal. He was successful, but his success was gained at the quality of the iron. The Devon Iron Works have long since been dismantled. In 1802 the Shotts Iron Works were projected under the able man-agement of Mr. John Baird, of the Canal Basin Feundry, Glasgow, who continued to be the managing partner of the concern for upward of 40 years. At these last-named works, in late years, it appears Bessemer works, in late years, it appears Bessemer pig iron is produced from hematite ore and the use of raw coal. When built, the furnace was one of the largest producers of pig in Great Britain, making 2000 tons of iron per annum. The returns for 1806 show that the Scottish iron trade entered the present continuous with an equipment of as furnished. ent century with an equipment of 27 furnaces, 18 of which, in the year named, produced 22,840 tons of pig, while England at the same period, blowing 161 furnaces out of 216 built, produced 24,385 tons. Such was the modest beginning of an industry which in 1870 contributed 1,206,000 tons toward filling the world's demand for pig iron. Since then production has shown considerable fluctuation, but has never reached the maximum of that year. The recent report of the British Iron Trade Association gives the following figures, the first column showing the number of furnaces in blast,

x820.				_									R:	26			 						1,206,000
																							1,160,000
																							1,090,000
																							993,000
																							806,000
1875.						0						,	I	14						,			1,050,000
1876.		۰				,		,				,	X	16									1,103,000
1877.				0	,	,	0		,		,	,	1	84			 						982,000
1878.			۰	۰									. 1	92			 					,	902,000

The New Postal Regulations.

In our issue of May 8 we gave a summary of the changes effected in the classification of the changes effected in the classification of mail matter by the New Postal law, passed March 3 and which went into operation on the 1st of May As these changes largely affect the mercantile, insurance, and other interests, and as they are at present but imperfectly understood, the subjoined detailed information upon the subject has been obtained through inquiry at the Post Office. It may be reliable to apply two coast in order that all the openings for subject has been obtained through inquiry at the Post Office. It may be relied upon as being in accord with the latest official rulbeing in accord with the latest official rulings and decisions of the department, and as absolutely correct. The rate on commercial papers, insurance documents, papers in legal proceedings, &c., when partly in print and partly in writing, has heretofore been the same as on letters, viz., 3 cents per half ounce. All such articles have now, with the exceptions mentioned, been assigned to the third class of mail matter, and as such are chargeable with postage at the rate of I cent for each two ounces when sent in unsealed envelopes or wrappers. The exceptions are: If such articles contain writing in the nature of personal correspondence, or are in them-selves the representatives of a monetary value. In these cases they become first-class selves the representatives of a monetary value. In these cases they become first-class mail matter, and as such are chargeable with letter rates of postage. According to the latest rulings of the department (which reverse a number of those recently where it penetrates into the arguments. (which reverse a number of those recently made under the same law), the specific examples of the exceptions to third-class matter are: Insurance policies signed and in force, daily insurance reports, insurance. transfers, notices of premium due, assignments, transfers, applications for insurance, ments, transfers, applications for insurance, promissory notes, attached to premiums or not, and all notices from local agents to policy holders respecting renewals, cancellations, receipts, or other kindred matters; also, all signed notes, checks, drafts, deeds, bonds, bills of lading, receipted bills, and signed receipts of all kinds. Insurance policies, canceled or incomplete; unreceipted bills, invoices and monthly statements may all be sent at third-class rates of postage.

Four parts coarse gravel, or broken stone and sand, and I part each of lime and cefment, are mixed to and I part each of lime and cefment, are mixed together dry. The lime is slaked separately and mixed with just mortar enough to cement it well together. Six or eight inches of the mixed together well set another coating is put on, consisting of I part cement and 2 of sand. This will answer for making the bottom of a cistern

large blast furnaces for making pig iron, an or form of presentation, to be written on the extensive forge for making bar iron, with covers or blank pages. Manuscript for puba foundry and other accessory works, the number of hands employed in the above works at that time amounting to from 300 to accompanied by proof-sheets, may be sent at third-class rates; but unless so accompanied, is chargeable at letter company at the time referred to exceeded made by hand, heretofore charged at letter made by hand, heretofore charged at letter rates, are now assigned to the fourth class, and may be sent on payment of postage at a cent per ounce, as may also original paints ings in oil or water colors, &c. Chromos are rated as third-class matter, unless mounted on cloth or pasteboard, in which case they belong to the fourth class. Postiron age and revenue stamps are now in the Works fourth class.

fourth class.

Articles of glass, formerly excluded from the mails, may now be sent at fourth-class rates (one cent per ounce), provided they are secured so as to guard against injury to other mail matter in case of breakage, and are boxed in accordance with certain instructions contained in the United States Postal Guide. Original packages of tobacco and boxes of cigars, and other articles sealed by internal revenue stamps, which were and boxes of cigars, and other articles sealed by internal revenue stamps, which were formerly charged at letter rates, are now placed in the fourth class by a decision of the department, which states that they "will regard the stamp placed over the cover or opening of such packages as evidence that no matter is contained therein which is subject to letter rates of postage." All persons who desire to avail themselves of the concessions noted above will understand that they involve certain drawbacks. For example, with the single exception of the packages sealed by internal revenue stamps, all mail matter not sent at letter

stamps, all mail matter not sent at letter rates must be left open to inspection by the Post Office authorities. No articles other than letters and postal cards can be re-turned to the senders on request, nor forwarded to other offices, unless again fully prepaid, in case the persons addressed have removed; nor can they be advertised; but if found undeliverable or uncalled for, they will be sent to the Dead Letter Office. Mail matter of the third and fourth classes is not matter of the thirt and fourth classes is not assorted and put up with, or in the same manner as, letters, being placed loose in canvas sacks and not in locked pouches; and of course whenever it is necessary, on account of unusual accumulation of mail matter or for other reasons, preference in dispatch is always accorded to letter mail.

Cements, Mastics and Concretes.

Many of our readers have occasion to use cements or mastics, especially in putting down cellar floors or making old walls tight They will find the following hints upon the

They will find the following initial apoint subject valuable:

A cement of one part sand, two parts ashes and three parts clay, mixed with oil, makes a very hard and durable substance like stone, and is said to resist the weather

almost like marble.

Damp brick walls are common, especially in houses in the country where they are exposed upon the north and east sides. So common is this that, in many places in the country, a strong prejudice exists against brick houses on account of their constant dampness. Last year a gentleman having a brick house exposed on all sides, and suf-fering from dampness in the kitchen, which fering from dampness in the kitchen, which was in a wing upon the most exposed side, tried an experiment which has proved very satisfactory. A barrel of the best English Portland cement was purchased, and a common tin wash basin used for mixing it. The cement was mixed with water till about the consistency of cream, and then applied thickly with a large paint brush. Of course the mixture had to be constantly stirred to prevent the cement from settling to the bottom. And on account of its very rapid settling it could only be mixed in very small quantities; half a gallon is about as large a quantity as can only be mixed in very small quantities; half a gallon is about as large a quantity as can be readily handled at a time. When first dried it seemed somewhat of a failure, because it could be so easily brushed off, but after it had had 24 hours to harden it formed a strong, durable coating. The color is a neutral tint, somewhat like Ohio stone. This coating kept the wall perfectly dry, and as it is not expensive and does not need skilled labor in its application, ought to be extensively used. We do not know just what Portland cement (English) is worth at the two coats in order that all the openings, &c., may be completely closed.

Cement is much stronger than mortar. and can be used to great advantage in many places instead of lime, even in the face of the fact that it is much more costly than the fact that it is much more costly than lime, except in a few favored localities where it is made. The usual proportions are 1 part of the hydraulic lime to 5 of sand. In pointing, the proportion is sometimes as low as 3 parts sand to 1 of the hydraulic lime or cement. Coarse clean sand—almost pebbles—can be used to the extent of 3 parts to 1 of the cement. Some advise mortar, to be allowed to set and then wet and worked again. This course will not answer with

For making floors, the following method is said to produce very desirable results: Four parts coarse gravel, or broken stone and sand, and I part each of lime and ce ment, are mixed in a shallow box, and well shoveled over from end to end. The sand gravel and cement are mixed together dry. The lime is slaked separately and mixed with just mortar enough to cement it well together. Six or eight inches of the mixed count.
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means of forming the strongest riveted joint. The first set of experiments had reference to the shearing resistance of riv-ets, the material of which yielded the fol-lowing average results by tests for tensile Strength: Breaking strain, per square inch
—Steel, 64,579 lbs.; iron, 49,795 lbs. Reduction of area—Steel, 30.1 per cent.; iron,
42.03 per cent. Elongation in 10 inches—
Steel, 2.06 inches; iron, 2.78 inches—which
shows an increase of steel compared to iron
of copyrights. shows an increase of steel compared to from of 30 per cent. With these materials shearing tests were made in an apparatus in which the specimens (% inch in diameter) were subjected to double shear. The steel showed an average shearing resistance of 49,683 lbs. per square inch—only 17 per cent. higher than that of the shearing resistence of the iron rivets, which yielded at 42,582 lbs. This explains how it is that, in the test pieces representing riveted seams subsequently to be described, the steel specimen, as a rule, broke by shearing of the rivets, and the iron by tearing the plate through the holes. It is also worth noting how far from the truth is the rule so frequently adopted, which assumes the tensile resistance of iron or steel to be about equal to the shearing resistance—at any rate in cases of double shear. In the present case the latter proved far less than the former—in the case of iron by 16 per cent.; in the case of steel by 28 per cent.—showing, besides, that the shearing resistance does not bear any fixed proportion to the tensile resistance.

Another point deserves consideration. will be seen subsequently that the actual shearing resistance of the joints had nothing whatever to do with the practical strength of the boiler, the joints leaking under a pressure far below that which could have broken them, and to a degree which made the boiler absolutely valueless. This leakage was mainly due to the compression of the rivet and to the elongation of the hole, which both combined to cause the rivet hole to open. The former is well shown after the burr left after shearing in the hole of the central plate of the shearing apparatus above described. These burrs, which of course would originally be circular, have assumed an elliptical shape. The reduction of the diameter in the direction of the strain was for iron and steel as nearly as possible the same, viz., 0.031 inch, after exposing them to the maximum shearing strain in each case, viz., 19 tons per square inch for iron and 22 tons for steel. There can scarcely be a doubt that in this respect the application of a somewhat harder material would prove advantageous.

The next step was to investigate the shearing resistance of single rivets actually superiority of riveting by machinery over hand riveting has been again demonstrated, while the experiments have shown that steam riveting is inferior to hydraulic rivet-ing so far as the quality of the rivet is con-cerned, but that hydraulic riveting is superior as to its effect on the plate.

rior as to its effect on the plate.

The average shearing resistance of the rivets was 46,592 pounds for iron and 59, 912 pounds for steel for 3\(\frac{1}{2}\)-inch rivets, inserted into 11-16-inch drilled holes. From other experiments the interesting fact was gleaned that the average breaking strain of \(\frac{1}{2}\)-inch steel rivets was 40,544 pounds, while the mean shearing resistance was 36,-882 rounds which proves that 3650 pounds. 885 pounds, which proves that 3650 pounds were owing to frictional resistance. Messrs. Greig and Eyth then describe and illustrate a long series of tests made with riveted lapjoints. The tests of the solid plates them lves showed their average tensile strength selves showed their average tensile strength to be 49,840 pounds per square inch for iron and 57,792 pounds per square inch for steel, the latter of which contained from 0.131 to 0.71 of carbon, 0.018 to a trace of silicon, o6 to 0.112 of sulphur, 0.048 to 0.073 of hosphorus, and 0.50 to 0.57 of manganese eing fully 16 per cent. higher than the for mer. The steel is pronounced to be too mild, and it is claimed that the harder the steel can be made without becoming brittle, the more effective will it be for boiler work. The shearing strength of the rivets used was for iron 15,810 pounds, and for steel 18,440 pounds for a section 11-16 inch in diameter. Comparative tests were made with riveted specimens, to ascertain the merits of punched and drilled joints both for iron and steel. The breaking strain of the drilled iron specimens was 50.4 per cent. of the strength of the solid plate; that of the iron strength of the solid plate; that of the iron between the rivets was 84.1 per cent. of the nominal breaking strain, which confirms Mr. Adamson's theory of the flow of force around a hole. The shearing strain of the broken rivets was 103 per cent. of the previously ascertained shearing strain of the rivet iron. The punched specimen broke through the plate at a strain which was only 40.6 per cent. of that of the solid plate. Thus it is seen that punching iron is unfavorable to the plate, while it was shown to be favorable to the rivets. With doubleriveted lap-joints iron plates developed a strength of 64 per cent. of the strength of the strength of the seam rose to 70 per cent. Iron butt joints broke in the plate at a

avoided, and partly because there is greater

Boilers.

A valuable paper, embodying a large series of suggestive experiments, was read by Messrs. David Greig and Max Eyth, of Leeds, before the British Institution of Mechanical Engineers. The principal object was to ascertain the relative value of mild steel and iron as employed for high-pressure boilers of the ordinary portable or traction engine type, the main question at issue being to determine experimentally the best means of forming the strongest riveted joint. The first set of experiments had reference to the shearing resistance of riverse and partly because there is greater frictional resistance between the plates. Messrs. Greig and Eyth then proceeded to make a number of tests of stayed ends, with the the object of determining whether there was any danger of bulging in high-pressure boilers stayed in the usual manner. They contsructed three drums representing a fire-box side with its stays, one being made entirely of steel, the second of iron and the third of steel, with check nuts at the ends of the stays on the side of the weaker plate; each was subjected to hydraulic pressure. One end plate was 34-inch plate, representing the inside of the fire-box; the other, corresponding to the outside shell, was 9-16-inch; the stays were ½ inch in diameter, inch; the stays were ½ inch in diameter, 4½ inches apart, and were tapped right through. The clear space was 2½ inches inthrough. The clear space was 2½ inches inside. In every case the breaking of a stay concluded the experiment, the iron barrel failing at 1230 lbs., which showed that the riveted head gave way at 12 per cent. below the breaking strain of the stay. Exactly the same result was obtained with the steel barrel, which yielded at a pressure of 1628 lbs., 12 per cent. below the maximum tensile strength of the stay. It would appear, therefore, that the stays in high-pressure boilers as usually employed are so weak that boilers as usually employed are so weak that no serious bulging takes place before the stays break. The longitudinal boiler barrel was next

investigated; three, of 3 feet length and 2 feet 11½ inches in diameter, were submitted to hydraulic pressure. An iron barrel with punched holes could not be made to hold 450 lbs., as it leaked badly along the longitudinal seams. The next step was to test complete boilers. An iron boiler with drilled holes and a single lap weld com-menced to leak at the longitudinal seams at a pressure of 420 lbs. per square inch, while the steel boiler (the barrel of which alone steed, etc.) lbs.) promitted with endiagraphy. the steel boiler (the barrel of which alone stood 490 lbs.) permitted with ordinary caulking as much as 520 lbs., and a maximum of 620 lbs. was momentarily attained. With a doubte-riveted steel barrel 650 lbs. were admissible, or 65 to 70 per cent. of the actual tearing strain of the rivet. The complete boilers above mentioned were carefully measured at different points for different pressures; in order to ascertain the ent pressures, in order to ascertain the amount of bulging. The conclusions drawn by the writers gives a concise and lucid résumé of their experiments. It would be premature, they say, to take any of the conclusions which can be drawn from the above tests as being final. As in all practical questions experience will have to supplement experiments before any abso-lutely definite results can be arrived at. But a few facts may be pointed out which seem to be clearly indicated by the results of the tests, and which, at least, show the direction in which further investigations may be fully conducted, and where practical

improvements are specially required.

There is no doubt whatever that the manufacturers of steel are now able to produce a material as homogeneous and reliable as the best iron. The absence of lamination makes it in this respect even superior to iron for a structure like a boiler, in which the plates are, as a rule, exposed to strains in very direction.

But this result has been obtained by reformed. A very interesting comparison of the results of hand, steam and hydraulic riveting is given in this connection, which we reserve for future consideration. It may suffice at this juncture to state that the superiority of riveting by machinery over bland riveting has been again demonstrated. by them no doubt considered the best for the purpose, has in these experiments proved to be not more than 16 per cent. above that of the iron, and the waut of hardness (as distinct from tensile strength) has proved to be a very serious disadvantage in boiler work. What the trade now requires is a return to a harder material of increased tensile strength, without losing the homogeneity which is at present obtained at the expense of hardness. It can scarcely be doubted that the increasing experience in the manuthat the increasing experience in the manufacture of steel which has already overcome so many and such serious difficulties will, in time, meet this requirement.

A number of curious facts referring to

riveted joints were indicated by the trials. Steel showed in this respect a decided superiority over iron beyond the proportion due to its greater tensile and shearing strength, the average strength of all the steel seams broken being 60.2 per cent. of the solid plates, that of the iron only 54.0 per cent. This proportion was still more striking in all lap-joints, in which the greater stiffne material prevented the of the plate in the line of the rivets, this being no doubt the chief cause of the great weakness of this kind of joint. The experiments further show that the plates invaria bly lose part of the tensile strength in the section of solid material left between the rivets of a seam, this loss being greatest in lap-joints. It also is greater in punched than in drilled plates (iron as well as steel), and greater in plates riveted together by steam than in those riveted by hydraulic pressure. On the other hand the strength of rivets against shearing is greater than its

normal figure, especially in lap-joints.

The usefulness of double-riveting appears to be mainly due to the fact that it more effectually prevents lap-jointed plates from bending under stress. At the same time the zig-zag riveting generally adopted in double riveting increases the tensile resistance of the material between the rivets considerably beyond its normal figure.

Butt joints with a cover on one side of the plates gave no advantage at all, the cover behaving simply as an intermediate plate attached to the two main pieces by an ordinary lap-joint. A marked improvement could no doubt be obtained by giving to the cover greater thickness, so as to prevent its bending.

The most effective seams as to tensile the strength of the seam rose to 70 per cent. Iron butt joints broke in the plate at a strain which was not higher than that to which the ordinary lap joint had been subjected, thus proving that the seam is not in any way strengthened thereby. The steel samples sheared through the rivets, their strength being 56 per cent. of the solid plate. Double riveting, it was found, did not yield any noticeable advantage, but, on the other hand, it was shown experimentally that butt joints with double covers, which break through the plates, are much stronger, partly because all bending of the plates is

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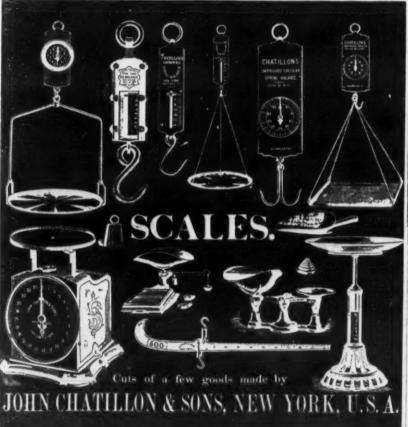
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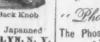
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valve, and the strain put on the weakest part of the structure never reached more than 70 per cent. of the breaking strain. This is the point where additional hardness of the material would be most useful, as it would prevent the opening of the rivet holes, which now makes a boiler useless long before the breaking strain is reached.

On the question of the durability of boilers, it is probably impossible to throw much light by experiments. Here practical experience is the only reliable guide, and every well-authenticated example is of some value. The paper may therefore be concluded with the mention of one such example which presented itself for careful examination during sented itself for careful examination during the last few weeks. Two boilers, similar in construction to those used during these experiments, were constructed by Messrs. John Fowler & Co. in the spring of 1868, one being entirely of steel, the other of iron. They were used for the two engines of a steam-ploughing tackle, and have just restrand from the properties to the results of the state o turned for repairs to the manufacturers after eleven years of work, during which they had been provided with new fire-boxes in

During the whole time these boilers had to go through the severest work and treat-ment to which boilers can be exposed, using every variety of the worst water, traveling over the reughest roads, and being exposed to every sort of weather without external protection. Both boilers, also, had to do ex-actly the same amount of work and to undergo the same hardships, as neither of the two engines can work without the other. The result is most striking. The steel boiler has never given any trouble, and is now by far the best of the two. A few cases of this description should finally settle the question as to the superiority of steel in this respect.

Lace Leather Cutter.

The value of an efficient tool to cut lace leather will be appreciated by all who have exact for ordinary purposes, and safe for had occasion to witness the waste in straight-

valve, and the strain put on the weakest in two places, and 12 feet long between the

supports?
1. If the depth be 6 inches and the breadth

4 inches, the center load = 4 × 36 × 90 divided by 12 = 1080 pounds.

2. If the depth be 4 inches and the breadth 2. If the depth be 4 inches and the breadth be 6 inches, the center load is 6 × 16 × 90 divided by 12 = 720 pounds. From these examples it is seen to be always most economical to set a horizontal beam on its edge, or place it so that the greatest dimension

shall correspond to its depth.

FIFTH.—To find the weight that an inclined

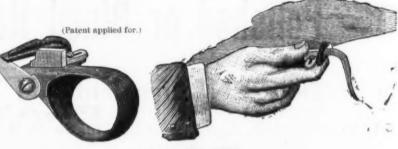
FIFTH.—To find the weight that an inclined beam (as a rafter) will safely bear at the center distance between supports:

Rule.—Find the center weight that a beam of length equal to the horizontal span or spread of the inclined beam will safely sustain, by the fourth rule; divide this result by the horizontal span of the inclined beam and multiply it by the length of the inclined beam.

Example.—What will a pine rafter 20 feet long, with 12 feet rise and horizontal span of 16 feet, if 2 x 4 inches, sustain safely at center when there is supposed to be no support to the control. If he is a supposed to be no support to the center. port at its center? If horizontal and 16 feet long, the safe center weight $= 2 \times 16 \times 90$ divided by 16, or 180 pounds, dividing this result by 16 and multiplying by 20, the safe center weight is 220 pounds. This would correspond to a uniformly distributed load of 440 pounds. If this rafter be supposed to carry two square feet for each foot in length, the load would be 104 pounds to each square foot.

Note.—A rafter of these dimensions would Note.—A ratter of these dimensions would need a support at the center; in that case its horizontal span would be 8 feet instead of 16. The result would be a safe center load of 440 pounds or a safe distributed load of 880 pounds—but this is distributed over a rafter 10 feet long instead of 20, so that on the same supposition as before the safe load become: 41.6 pounds per square foot—a safe load for any roof.

Remarks.—This rule, although sufficiently



LACE LEATHER CUTTER.

ening lace leather cut with a pocket-knife.

In the accompanying engraving, we show a
tool recently devised and introduced by
Messrs. Jackson & Tyler, of Baltimore, Md.

As will be seen, it has an adjustable attach-As will be seen, it has an adjustable attachment for maintaining the proper width of the lace cut. It is used in the following load is wanted, the following rule must be the lace cut. It is used in the following manner: Place the cutter on the second finger of the right hand and let the first finger rest under the cutter, with the thumb pressing on the top.

How to Find the Bearing Strength of Timber.

Prof. Carpenter, of the Michigan Agricultural College, furnishes the following rules for finding the weights that timber of a given size, supported at both ends, will given size, supported at both ends, will support is a piece 1.3 x 3.

Hence the answer is a piece 1.3 x 3.

Hence the answer is a piece 1.3 x 3.

Hence the answer is a piece 1.3 x 3.

sustain:

First.—If a weight be uniformly distributed from end to end of a horizontal beam, it produces the same effect on a beam as though one-half the weight were gathered at the center of the beam.

Example.—A horizontal beam, 16 feet in length, sustains a floor 2 feet each side of it. If the weight of floor and load that, may be expected to get on it be taken as 75 pounds per square foot, we should find the total load sustained by the beam to be its length, multiplied by the number of square feet sustained, multiplied by the load on each square foot, or 16 × 4 × 75 = 4800 on each square foot, or $16 \times 4 \times 75 = 4800$ bounds. This would be equivalent to a central following table gives the safe strength of different woods in pounds per square inch.

er load of 2400 pounds.

SECOND —(Converse of first.) If a beam ustain a certain load at sustain twice as much load provided it be uniformly distributed. There.—The safe load should not exceed

one-fourth or one-fifth the breaking load in bridges, or in floors subject to much vibration from moving bodies. In roofs the safe load should not exceed one-fourth or one-third the breaking load. (These precau one-third the breaking load. (these breaking load, and imperfections in workmanship and material are constantly occurring).

FOURTH.—(The safe load is assumed to be

one-fifth the breaking).

To find the safe load that a horizontal pine beam, supported at both ends, will

sustain:
Rule.—Multiply the breadth of a beam by the square of its depth, and that product by the number 90; divide this result by the length of the beam between the supports, and the quotient will be the number of pounds in the load that the beam will safely carry at the center. If the load is uniformly distributed it will be twice the safe center load, and the foregoing result may be doubled to obtained the total distributed load. (See rule first and second.) If any material besides pine is used, instead of the umber 90 the numbers in the following

table must be used.	
White oak 1	20
Red or black oak I	E(
	30
	80
	6k
White beech	90
	50
	g(
	8
	94
	80
	44
	74
Locust	

ming lace leather cut with a pocket-knife. five, is used, must be replaced by more ex-

breadth II.I, divided by 9=1.3.

Hence the answer is a piece I.3 x 3.

When the load is distributed over a number of square feet, the center load must first be found by multiplying by the number of feet and dividing by 2.

SEVENTH.—It the beam is inclined, divide the center load by the length of the beam. Multiply this quotient by the horizontal space, and proceed as in the sixth.

Eighth.—The amount an upright beam will safely carry when subjected to a pulling strain, can be found by multiplying the number of square inches of its cross section by the strength of 1 square inch. the strength of I square inch.

OI	an	TE	I	21	u	ı	j	١	W	6	М	И	u	23	1	1.1	A	١	ď	Ų	U.	u	å	u	l 25	۶	ŀ	Pt;	2.1	r	B	M.	ľ	ц	ä	Į,	7	ø	1	и	¥(
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NINTH.— The amount an upright post loaded at upper end will sustain can be found appreximately in the same way as the tensile load: the amount per square inch should sile load; the amount per square inch should be taken about four-fifths that given in rule eight. This is an approximate rule that can not be relied on in cases where very accurate results are required.

These rules give accurate results, with the exception of rules fifth and ninth. The results given by rule fifth are safe and do not differ much from the true results. Those given by rule ninth, for the size of posts, are ry nearly correct when the posts are of moderate length.

Diverting the Oxus River from its Present Course.—One of the numerous engineering problems which it has been left to this generation to solve is the turning back, by Russian Engineers, of the Oxus into its Caspian Sea channel, from which it was diverted into Lake Aral by Octai Khan, when beseiging Khiva in 1235. Immediately after the Khiva expedition of 1873, a scientific survey was made of the Lower Oxus, and most of the experts were of opinion that the progressive diminution of the river by artificial irrigation, and the evaporation consequent upon the destruction of the forests which shielded it from the sun, had made its volume insufficient to traverse an extra distance of nearly 5000 miles incumbered with deep sand. It is now stated, however, that the experiment is actually being made; and the Lower Syr-Daria being only 12 inches deep in summer, the Russians may well do their utmost for the Oxus, as their Example.—What will be the center safe only possible waterway into the heart of load of a pine beam, 4 x 6 inches, supported Central Asia.

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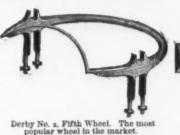


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LABOR AND WAGES.

The coal miners of Western Pennsylvania The coal miners of Western Pennsylvania held a convention last week at Pittsburgh. Representatives were present from nearly all the pits in the district, both railroad and river. The only action taken was the appointment of a committee, consisting of four river and four railroad miners and one at large, to make arrangements with the coal operators for a conference on the subject of wages. The purpose of the conference, as declared by the officers of the convention, is to adopt a scale of prices whereby strikes may be avoided.

The strike in the Mahanoy district appears The strike in the Mahanoy district appears to be extending, and although no new features have been developed at that place, all is quiet and many of the men have returned to work at the advance of five cents per wagon offered by the operators. Those of the miners who have not yet accepted those terms will in all probability do so in a day or two. The strike has extended to the Lehigh district, and the miners at Ebervale, Harleigh. Beaver Brook and Audenried Harleigh, Beaver Brook and Audenried struck yesterday morning for an advance of 20 per cent. The Jeansville men gave notice that they would cease last night unless their demand for an increase was complied with. Under the basis of 1875, by plied with. Under the basis of 1875, by which the Lehigh miners and laborers are now paid, when coal sells at \$3 per ton at tide, the miners will receive 30.06 cents per ton for cutting coal, miners' wages per week, \$0.07; inside laborers from \$7.78 to \$7.13 per week; outside laborers from \$6.60 to \$6 per week.—Pottsville (Pa.) Miners' Journal, Inlu II. Journal, July 11.

The following circular has just been issued by the Schuylkill Coal Exchange:

POTTSVILLE, PA., July 9, 1879 The following collieries drawn to furnish prices of coal sold in June, to fix rate of wages to be paid for that month, make the following returns:

The average of these prices being \$1.68, the rate of wages to be paid for June, 1879, is 27 per cent. below the \$2.50 basis. Notwithstanding the above the rate of wages will be 16 per cent. below basis, in accordance with the arrangement made by the Philadelphia and Reading Company with its

The Allentown, Pa. Chronicle and News of July 11th, says: There is great discon-tent among the miners in the Hazleton district, and this morning strikes were inaugu

tent among the miners in the Hazleton district, and this morning strikes were inaugurated at Jeansville, Buck Mountain, Eckley, Jeddo and other places. The strike is expected to become general. The miners demand an advance in wages of 15 per cent. for every dollar advance in the price of coal. A meeting of representatives of the collieries in the Lehigh region unanimously adopted the following resolutions: "Resolved, That we demand 40 cents per ton when coal sells at Elizabethport and Port Johnson at \$3 per ton; miners' wages, company work, \$11 per week; inside laborers, \$9 week; outside, first class hands, \$7; second class, \$6; and for every dollar that coal advances we demand 5 cents per ton advance, and for outside and inside, and all those that work by the day, we demand 15 per cent. for every dollar coal advances in market, or the fractional part thereof. That when coal comes under \$3 we cease work. That if the demand is not encoaded to us we case work comes under \$3 we cease work. That if the demand is not conceded to us we cease work on the 10th inst.

The chimney glass works of Messrs Challinor, Hogan & Co., and Messrs. Evans & Co., on the South Side, Pittsburgh, resumed operations on Monday, the 7th inst. The old gatherers will not be employed unless old gatherers will not be employed unless they accept the manufacturers' proposition. They are not supported by the blowers in their present movement. The troubles between the pressed glassware makers and their employers, too, are settled, and work will be resumed at McKee's works. The old hands will work side by side with the men who took the places of a few of them as green hands. There is to be no reduction in wages, and the strikers even claim that there will be an increase. The manufacturers say they have no objections to the strikers claiming a victory in the case. All they wanted was the opportunity to run they wanted was the opportunity to run their works as they pleased without the dic-

There has been some trouble at the There has been some trouble at the foundry of A. Garrison & Co., Pittsburgh, some 10 or 15 men having been discharged. Owing to a rush of orders, the men had agreed to work three and a half hours each day overtime, for which they were to be allowed one-half day's wages. They were tardy, and the firm lost from 15 to 30 minutes to each man in frequent cases. The question of wages never entered into the subject, but the men were given the alter-native to work full time or withdraw from the establishment. They accepted the lat-ter. Their places are now filled by other skilled mechanics.

MINING AND MINERAL ITEMS.

COAL.

The failure of the usual June rise of the Ohio River has left the lower Ohio almost bare of Pittsburgh coal, and the manufacturers of the cities along the river are trying other coals which they have hitherto disearded.

A correspondent from New Albany, Indi-A correspondent from New Albany, Indiana, says: The De Pauw American Plate Glass Works of this city, having tested the efficacy of Davies County (Ind.) coal in the furnace, has contracted for 10 car loads per day during the continuance of low water in the Ohio, and the the exhaustion of the supply of Pittshurch coal, and will resume ply of Pittsburgh coal, and will resume operations on Monday next. Most of the other large factories in the city have con-tracted for Indiana coal sufficient to bridge over the famine in the Pittsburgh article.

Several coal companies of large means are procuring the necessary outfit and opening mines in the neighborhood of Ferrara, Perry County, Ohio, preparatory to shipping coal in large quantities as soon as the Columbus which is more than half of what is required to rescue the mines in the and Sandy Creek Valley Railroad is finished district from threatened inundation.

to Ferrara, which is to be the present terminus of the road. The "Great Seam" is inus of the road. The "Great Seam" is from 12 to 13 feet thick in this locality, and the "Stallsmith" and "Norris" seams from 4 to 5 feet each in thickness, and situated, eologically speaking, above the great seam.

-Pittsburgh Telegraph.

The Centerville (Iowa) Coal and Mining

Company reach coal in their new shaft at

depth of 105 feet.

The total product of the Schuylkill region until July 5, foots up 12,172,244 tons, which is an increase of 5,142,236 tons over the same period of last year, and 2,361,893 tons over the year 1877.

The celebrated Tilly Foster Iron Mine has been purchased by parties in the interest of the Lackawanna Coal and Iron Company, of

Scranton, Pa.

Two English steamers have just discharged Two English steamers have just discharged over 3500 tons of Spanish iron ore from Gijon at Hoboken. They receive \$2.50 freight per ton, which is thought better than receiving no freight at all on ballast, and paying to discharge it when here.

A new vein of iron ore has been opened and worked during the past few months at the Podunk Mine, in Fort Ann, N. Y., which has already assumed large proportions.

The production of Joplin lead is decreasing. According to some statements, if new mines are not soon discovered, the town will be but a thing of the past.

PRECIOUS METALS.

PRECIOUS METALS.

The San Francisco Bulletin condenses the history of Mono County and its mines: The first bar of bullion from the Standard mine in Mono County was shipped in April, 1877, and from that time down to June 25, 1879, the mine produced and shipped \$2,366,771, of which \$1,300,000 was paid over to stockholders in dividends. It is said there is enough ore in sight to keep the mill in operation for two years more. The first in operation for two years more. The first bar from the Brodie mine was shipped in July 1878, and from that time down to June July 1878, and from that time down to June 25, 1879, the mine has produced \$1,242,712, and paid \$800,000 in dividends to stockholders. This mine recently renewed its lease of bullion-bearing rock, and bids fair to yield handsomely for some time. It is said that Mono County has given \$4,000,000 to the world since the renewal of operations at that camp in April, 1878. Many predict a prosperous mining future for the county.

county.

Consolidated Virginia has just paid its forty-ninth dividend, making \$49,850,000 from the beginning. California has just paid its thirty-second, swelling its total to \$50,780,000, and Eureka Consolidated has just declared its forty-fourth one, footing up from the first \$3,350,000.

The San Antonio Express recently published a very concise and exhaustive description of the mineral lands of West Texas. A mountainous section taking in the entire

mountainous section taking in the entire county of Llano and portions of Burnett, Blanco, Gillespie, Mason and San Saba counties, is described as very rich, immense beds of quartz cropping out, which have in some instances been traced for miles. In the Care Brown silver mine one was produced. Cape Brown silver mine ore was produced whose product would be \$2000 to the ton. The Lawrence Miller Mine has also yielded fine ore, and an Eastern company has made overtures for its purchase, agreeing to put in \$300,000 worth of machinery. An assay of Galena ore from the McGehee mine gave result of from \$320 to \$580 per ton.

Twenty million dollars is the small amount for which the Little Pittsburgh, of Leadville,

has been stocked.

How to Grind Edge Tools.

A writer in Carpentry and Building says: Edge tools are fitted up by grinding. The sharp grit of the grindstone, being harder than the iron or steel, cuts very small channels in the surface of the metal, and the renels in the surface of the metal, and the revolving disk carries away all the minute particles that are detached by the grit. If we were to examine the surface of the tool that has just been removed from the grind stone under the lens of a powerful micro scope, it would appear, as it were, like the rough surface of a field which has recently been scarified with some implement that had formed alternate ridges and furrows. Hence, as these ridges and furrows run together from both sides at the cutting edge. gether from both sides at the cutting edge, the newly ground edge seems to be formed their works as they preased when they propose to the newly ground edge. the newly ground edge as they preased the newly ground edge as they preased the newly ground edge. The newly ground edge as they preased the newly ground edge. consist of a smooth edge. For this reason a tool is first ground on a coarse stone, so as to wear the surface of the steel away rapidly; then it is polished on a wheel of much finer grit; and, finally, in order to reduce the serrature as much as possible, a whetstone of the finest grit must be employed. This gives a cutting edge having the smallest possible serration. A razor, for example, does not have a perfect cutting edge, as one may perceive by fect cutting edge, as one may perceive by viewing it through a microscope. Begin-ners are sometimes instructed, when grinding edge tools, to have the stone revolve to-ward the cutting edge, and sometimes from

it. When the first grinding is being done it is a matter of indifference whether this is done or not; but when the finishing touches are applied near and at the very edge, a grinder can always complete his task with more accuracy if the periphery of the grindstone revolves toward the cutting edge, as the steel that is worn away will be removed more easily; whereas, when a stone runs in the opposite direction, the grinder cannot al-ways tell exactly when the side of the tool is fully ground up to the edge. This is more especially true when the steel has a rather low or soft temper. The stone, when runow or soft temper. The stone, when turning from the edge, will not sweep away every particle of the metal that hangs as a "feather;" but when the stone revolves toward the edge, there will be no "feather edge" to deceive the eye of the grinder.

The Birmingham correspondent of the Times says that the only comforting incident in connection with the iron trade at the present time, is that the Tipton Drainage Commissioners have now raised nearly £21,-

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The Iron Age

Metallurgical Review.

New York, Thursday, July 17, 1879.

Publisher and Proprietor DAVID WILLIAMS JAMES C. EAYLES Editor. JOHN S. KING Business Manager

RATES OF SUBSCRIPTION

INCLUDING POSTAGE.

. TO ALL OTHER COUNTRIES.

PER ANNUM, POSTPAID. Weekly Edition: \$5.00-\$1:-25 frames-20 marks-12 florins-6 roubles (coin)-25 lire-20 pesetos. Semi-Monthly Edition: \$2.50-10/-12½ frames-15 marks-6 florins-3 roubles (coin)-12½ lire-20 pe-

setos.

Monthly Edition: \$1.25-5/-614 francs-5 marks-3 florins-114 roubles (coin)-614 lire-5 pesetos.

REMITTANCES should be made by draft, payable tothe order of David Williams, on any banking house in the United States or Europe; or, when a draft cannot be obtained, in postage stamps of any country.

NEWSDEALERS OR BOOKSELLERS

in any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A., and London, England: or the San Francisco News Co., San Francisco, California, U. S. A.

RATES OF ADVERTISING.

One square (12 lines, one inch), one insertion, \$2.50 one month, \$7.50; three months, \$15.00; six months \$25.00 one year, \$40.00; payable in advance.

DAVID WILLIAMS, Publisher, S3 Reade Street, New York.

PHILADELPHIA.......220 South Fourth Street Thos. Honson, Manager.

BRITISH AGENCY. The publishers of The Ironmonger, 44a Cannon street London, England, will receive orders for sub-cription and advertisements on our regular terms.

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Thirty-third Page.—Boston and St. Louis Hardware and Metal Prices.

Last week witnessed a most peculiar labor outbreak in the city of Pittsburgh, which is strike in the coal mines of the Birmingham situated in a suburb of Pittsburgh. It arose interest for Americans. France, England, from a refusal of the company to curtail Belgium, Austria and Switzerland, however, theories of the miners. Some of the miners changes. were willing to make full time, and permission was given them. A strike resulted, and as the offenders kept on working, a when the bill was passed, the following immeeting of the striking miners was called. Having some fear of the law, the brave last reading: Tobacco to pay an import they courageously sent their women to ac- of \$10.50, proposed), and petroleum to pay complish by physical force what they could the \$1 50 per 100 kilos proposed. not by moral suasion, and an amazonian

suits have been entered against the women, who are mostly Germans.

American Trade and the New German Tariff.

The new German tariff imposes duties on everal American products hitherto exempted, and is therefore important to us in more than one respect. With the assistance of late telegrams sent to the Associated Press, we shall endeavor to present this tariff, in its main features, as it was finally adopted July 12. Before doing so, however, it will be instructive to cast a glance at the motives which led Prince Bismarck to propose the new system, and to carry it into execution in such an expeditious manner.

Ever since the attempts at assassination made upon the Emperor William last summer. Prince Bismarck has deemed it imperative to obtain a still greater control of the management of the Empire through centralization. The so-called "matricular" contributions hitherto made by Confederated States, toward defraying the expenses of the Empire he proposes to do away with by an increase of imperial revenue from customs, and at the same time he affords protection to certain agricultural, pastoral and industrial interests by thus raising certain duties. The tariff has thus become a revenue tariff on the one hand. and moderately protective on the other.

On December 15, 1878, Bismarck embodied his views in a letter, which took most people by surprise. January 3, 1879, his project was submitted to a special committee: April 2, the Federal council adopted the report of the latter, with a few trifling modifications. It was then handed over for debate to parliament, where the measure passed after a discussion extending over some six weeks. Prince Bismarck and his proposed tariff modifications were violently attacked by the opposition, but the measure was finally carried, with some changes which we shall point out. Bismarck personally defended his measure, and made important concessions in a party sense in order to fortify his position, his well-known diplomatic cleverness enabling him to defeat his antagonists by marshalling forces against them even from the clerical ranks.

The project as it was submitted to parliament, stood as follows:

To remain duty free: Coal, coke, firewood, charcoal, stone, lead, copper, spelter, tin in ingots, slabs, pigs and in the ore vylinders, silk, wool, flax and raw cotton. hides, skins and undressed furs, paper pulp, rags, books, India rubber, tar, gunpowder, sediment from wine, mineral water, manures, refuse from hides, metals, &c., colts and goats.

Goods heretofore free to be made dutiable as follows (per 100 kilos, except where otherwise indicated): Wheat, 25 cents of our money: oats, 25 cents; barley, Indian corn and buckwheat, 12 cents; paddy, 12 cents; flour, 50 cents; malt, 30 cents; steers, per head, \$1.50; oxen, \$5; cows, \$1.50; young bulls and cows, \$1; calves, 50 cents; sheen, 25 cents; fresh meat, per 100 kilos, \$3; poultry and game, \$3; greases, \$2.50; palm and cocoa nut oil, 50 cents; petroleum, \$1.50; pig iron, 25 cents; bar iron and raffs. 65 cents; thick iron wire, 65 cents; thin ditto, 75 cents; sheet lead, 75 cents; 75 cents; sheet zinc, 75 cents; rolled tin, 75 cents; empty bottles, 75 cents; wrapping paper, \$1; straw mats, 75 cents; cotton wadding, 37 cents; dressed silk, not dyed, \$3; combed wools, 50 cents, and lumber, 21/2 cents.

Articles which are to remain as heretofore, with the duty they have been paying set against them: Sugar, per 100 kilos, \$7.50: cocoa and cocoa shells, \$8.75; oranges and lemons, \$3; cutlery, \$6; sewing needles, Eighteenth Page.—Imports. Coal. Old lemons, \$3; cutlery, \$6; sewing needles, Metals, Paper Stock, etc. Philadelphia. Pitts- \$15; steel pens, \$15; manufactures of copper, tin and lead, \$6; fine brushes, \$6, and

	roo kilos.	100 kilo
Wine and cider, in casks		\$4.00
" in bottles		4.00
Brandy and rum	12.00	0.00
Beer	E.50	1.00
Hops		2,50
Coffee, green	10.50	8.75
" roasted	12.50	10,50
Tea	25.00	12,00
Salt	3.20	3.00
Pepper	12.50	9.75
Butter		2.00
Cheese	. 5.00	2.50
Raisins and figs	7.50	6.00
Honey		0.50
Oil for table use, in casks	2.00	1.25
in bottles		1.25
Candles	3-75	2.25

Aside from these modifications, the Ger- dustry. becoming somewhat notorious in labor an- man spinning interest has been more For some time past there has been a powerfully protected, but we abstain from

portant resolutions have passed a third and

crowd with clubs and filth and stones at posed to be levied on the importation of raw ment or rash attempts to introduce untacked a pit boss who had been teaching cotton, and according to the Associated tried precesses, change in the character reason to believe that the various beds struck making fuel. There remain but few uses black-legs how to mine coal, chased him into Press telegram of July 11, it was adopted. of the ore, excessive freight for sup- at different levels are really nothing but for which charcoal pigs or blooms are indis-

until his pistol drove them away. Criminal regards this item. An additional duty of 50 these, singly or together, have contributed connected by a series of upheavals. Present per cent. is to be levied on the productions to wreck good mines, while quite as often the developments have yielded abundant indicaof countries treating German products with public have been imposed upon by "wild-cat" tions pointing to the probable discontinuance exceptional rigor—a retaliatory measure enterprises, floated and engineered in stock of the majority of the veins as greater which the government had proposed to make markets by swindlers. The first step which depth is reached. So far as prospectan extra duty of 100 per cent.

affects the following products: Breadstuffs, by those who offer a part or the whole for live animals and fresh meat, the various greases (such as lard, &c.) and petroleum. a mineral deposit is misrepresented, and the have been struck in a few locations, the Iron and the other metals in a manu- confidence with which crude theories as to factured state we did not ship to Germany. nor should we have shipped them anyway; hence the duty does not affect us. Cutlery, we perceive, remains as it was, and we presume this is true with respect to hardware serting that they were in all cases premediand tools. The duty on petroleum, it is expected, will produce \$5,000,000 revenue; but and ignorance of promoters of mining this article is of a prime cost so low that they schemes were so blended as to add the dancan produce nothing in Germany to successfully compete with it, refined rapeseed being dearer and giving a poor light. The same is true of breadstuffs. A lish and Dutch, have so severely suffered duty of 50 cents per barrel on flour is very from injudicious ventures in Western mines, moderate, and our flour of the better kind is that little assistance can be hoped for at so superior that the Germans will be glad to their hands for the development of our minpay the difference. We may say as much eral resources. Indeed, it would seem that of the cereals. We are producing wheat what little confidence is left abroad will be and corn so cheap and our crop is so abundestroyed by enterprises which are now bedant, that, with reasonable freight rates to the seaboard and moderate ones across the floated. These indications may suffice to Atlantic, the duty of 7 cents per bushel on prove that an investment in a gold or silver thrown out, and then they will fall from the wheat and 31/2 cents on corn, will not prevent our people from underselling the German farmer, with wheat at least, in his own market. Prime refined lard is so cheap in which demands exceptional prudence and America (61/4 cents), that the 11/4 cents duty foresight. If these are exercised, we know quantity, may be utterly unsafe for purwill not exclude it. As for live animals for slaughtering and fresh meat, the Germans would probably never import them from in a well-managed mine. the United States, even if duty free, for they are themselves exporters to England. the necessity of gaining a clear insight into the nature of the deposit before accepting The English and French markets will suffice all our purposes in pushing this new the nature of the deposit before accepting market value of the ore in sight. It is, export branch. Our cotton the Germans the statements made as to its prospective therefore, desirable for outsiders to excannot do without, and any trifling duty thereon will not make the slightest differmining engineer three distinct means of ascertaining the value of a mine, or at least a ence so far as our export to Germany is

concerned. The duty on tobacco, it is true, falls heavily on our product, and is about the the bodies of ore which the workings of the silver mining by small speculators, will deonly one likely to do some mischief, although we believe that the Germans are absolutely compelled to buy our seed-leaf tobacco, for they have none of German growth that we know of that might be used as a substitute sight is the best basis for the valuation of a prises are likely to be overlooked, shrewd for it for cigar wrappers, in imitation of Havana; nor do we believe that for smoking tobacco mixtures and for chewing they can dispense with Virginia and Kentucky. Taking a general view of the new tariff, we feel convinced that it will do little, if any, harm to our growing business relations with Germany.

Gold and Silver Maning Investments.

The refunding of the national debt, and the reluctance with which money is invested in manufacturing enterprises, owing to the numerous failures during the last few years, has thrown upon the money market large amounts of funds, for which opportunities of more remunerative employment than are now offered are eagerly sought. Attention has been justly directed to the mineral wealth of many sections of the country, and more especially to that of the Rocky Mountains. The mines of the Comstock lode, with its far-famed bonanzas and its less notorious, but more oppressive, assessments, have monopolized the attention of the general public, and succeeded in convincing thoughtful men that the mining of the precious metals is a lottery so conducted as to afford its managers the benefit of enormous odds. Little was known or thought of the innumerable small mining enterprises of the West which, controlled by a limited number of capitalists, were quietly conducted on ities, can prove remunerative. A third sound business principles. The readiness point which deserves closer scrutiny at common woolen yarn, 75 cents.

With which large numbers of small investors the hands of investors the following are articles on which the have fallen, and still fall, victims to tricky the deposit itself. with which large numbers of small investors duty has been raised, with the old and new stock manipulations like those which have may be divided into two classes. The the public. Nothing that is honest and legidisgraced the management of some of the Comstock mines, proves that the character "true fissure veins." They are fissures of the business of gold and silver mining is in the earth's crust, formed and filled entirely misunderstood by the general public. at a period subsequent to the formation of Instead of being a game of chance, in which the surrounding rocks. Fissure veins frea lucky venture may be rewarded with extraordinary returns, the extraction of the precious metals is a pursuit which calls for as much prudence, energy and enterprise as is that they always extend downward with any other legitimate business; and while in out giving out. Such, at least, has been the some cases the profits may be exceptionally large, they should not be expected, as a rule, to go beyond the figures which are conceded to be satisfactory in other branches of in-

This is too easily forgotten when a fever of speculation seizes rich and poor. Securigoing into the somewhat complicated de- ties are purchased whose intrinsic value is Coal Company, Limited, whose mines are tails, the more so as they have no practical far below the valuation which they have reached, upon the basis of fabulous reports and cleverly distributed dividends. They inproduction in accordance with the peculiar are directly affected by these important duce a gambling mania. Only a few buy for the sake of permanent investment, the According to mail advices to the middle great majority purchasing with the object of of June, and telegrams to the 12th instant, holding for a rise or making a "quick turn." tinction between a regular fissure vein and when the bill was passed, the following im—

The bubble finally collapses, and the bona deposits which in their nature are of uncertainty to their own against the influences which are fide investors are left to mourn over the strikers concluded it would not be wise to duty of \$21.25 the 100 kilos; crude feathers them. The collapse of so many mining en ination has left no doubt that the so-called upon the field which, a few years ago, lead a forlorn hope against the miners, so to be duty free; coffee to pay \$10 (instead terprises in the past has been due to Leadville "veins" are not fissure veins, but seemed to belong exclusively to charcoal During the debates a small tax was pro- ance of the methods of metallurgical treat- which it rests, and is in turn older than the beginning to have too great a value to per-

an intending investor ought to take is to as- ing and actual extraction have gone, So far as American interests are con- sure himself of the actual present value of erned, the new tariff, as we have given it, the mine, and of the validity of the title held sale. The audacity with which the value of

its future prospects are advanced, are mar-The history of the development of velous. mining in this country is full of painful incidents of this nature. We are far from astated swindles, as at times the enthusiasm gerous element of sincere conviction on their part to the allurements of their representations. Foreign investors, notably the Engbest chances gleaned from a week's study of the mining stock quotations, is a matter of few better opportunities to profitably employ capital than the purchase of an interest

ct the attention of would-be investors-

near approximation. The first is the valu-

mine have laid bare. The more regular and uniform the occurrence of the ore bodies in scientious engineer and geologist, we learn that one-third of the area of the property, the explored portion, will probably yield three millions worth of ore. Granting that the remaining two-thirds are as rich, which they may or may not be, we read the figure of nine millions as a fair estimate of gross returns. Eleven millions of dollars are, therefore, the price which is to be paid for possible chances and for the contested, though promising, right of the company to which lie beyond the vertical boundary lines of their group of claims. This is exorbitant, even if the dividends which the company may be able to pay for some years are equivalent to a large rate of interest on so inflated a capital. A second basis is the amount and value of the ore already extracted, which may serve as a good guide to determine whether or not regular and continuous working, with improved facilat a period subsequent to the formation of quently vary but little in thickness, though they are rarely uniformly filled with one or more minerals. Their chief point of interest general experience of miners in all countries. deposit downward may be relied upon. This is not so with the other class of deposits which, being of different origin, obey other posits a second source of uncertainty is added to that of an irregular distribution of deposit itself will continue. This is a cir-

An instance of recent date, in which distain duration, is that of the silver lead veins at work to destroy their industry. an empty house and held him in "hock' We shall have to wait for details by mail as plies of product, costly litigation, &c. All different portions of the same deposit, dis- pensable, and, considering the rapid progress

camstance which should be thoroughly un-

there is great irregularity both in the thickness of the deposit and in the value of its contents. In fact, there can be now no doubt that while large and rich deposits prospects of the greater number are indifferent, while many of the claims are worthless.

From what has already been said, it is evident that the mines of Leadville belong to the class requiring most cautious investigation on the part of investors. If our estimate of the character of the deposit at that point is correct, there is no difficulty in understanding why prudent men, acquainted with the country and experienced in gold and silver mining, are eager to unload Leadville stocks; and why most of them who buy and hold them do so expecting to make enough during the life of the mines to return their investments with interest. With the general public, however, the case is quite different. Judging from the indications, the stock of the Leadville mines will ing placed on the market, or have just been be worth most for stock jobbing purposes up to the time the last shovelful of ore is mine, instead of being a simple guess at the highest valuation they are likely to attain to zero. For this reason, stock which may be valuable as representing a mass of rich ore, easily worked but definitely limited as to poses of investment. In the case of Leadville, the ore seems to be like any other merchandise. It has value without doubt. There is one point to which we would di- and may be profitably worked, but we doubt if any shrewd operator would be willing to purchase a claim now for any more than the value. There are at the disposal of the hibit extreme caution in purchasing their stocks, if it is desired to hold them as in-

There are indications which warrant the ation of the ore actually in sight; that is, belief that the interest now felt in gold and velop into a speculative excitement. we may expect to see the market flooded the deposit, the closer will be the approxi- with the stocks of wild-cat companies, and mation. While the estimation of the ore in while many deserving and promising entermine, it is manifestly unfair to expect the and unprincipled operatives will have little surrender of property rights on unopened trouble in entrapping the unwary small ground without some equivalent. This is capitalists, of whom we may expect that the factor which is generally overestimated, thousands will be ruined by the collapse and which is usually made the pretense of which, under such circumstances, will be inan exorbitant valuation. As an instance evitable. This will be the more to be regretof this kind we may cite the little Pittsburgh ted as it will discourage investments in legiti-Mining Co., of Leadville, Col., which has been stocked on the basis of twenty millions italists to neglect the many promising openitalists to neglect the many promising openof dollars. From a report on the property ings for investment offered in the mining by Dr. Raymond, an experienced and condistricts. We have no wish to be understood as discouraging investments at Leadville, if the nature of the ore deposits is understood and the fact is realized that their exhaustion is only a question of time. Our object is only to counsel in mining investments the same prudence which capitalists display in the ordinary transactions of life. If those with money to invest will buy mining stocks with as much judgment as they would display in buying a horse or a house, the danger which now menaces legitimate mining will be work those portions of the vein on the dip averted. No man would buy a house from a description in a real estate agent's circular, nor a horse unproved on the representations of an interested jockey. But men and women will buy large blocks of shares on the strength of prospectuses issued by the promoters of wild-cat mining operations, or on the representations of men at once ignorant of mining and interested in making large commissions. Such hap hazard ven tures always were and always will be dangerous, and in the present crisis of our mining industries, every man who has useful the hands of investors is the nature of information which will protect the unwary Metalliferous deposits from the wiles of swindlers should give it to

An Organization of Charcoal Iron Makers, and What It Suggests,

Elsewhere in this issue we publish a report of a meeting of the charcoal iron manufacturers at Philadelphia, with a view to arranging the preliminaries for the organization of an association. We sympathize with the objects of this movement, so far as we un-With fissure veins the continuance of the derstand them, and believe it will result in permanent benefit to this important branch of the iron trade if wisely managed. There is certainly room for improvement in our laws as to their continuance. With such demethods of making charcoal iron, and especially in our methods of making and using charcoal. The valuable foreign literature the valuable mineral within the confines of of forestry has hitherto attracted but little the deposit: there is no telling how long the attention in this country, and it is important that we should begin at once to conserve our timber-at least to the extent of avoid ing useless waste. It is also necessary that the manufacturers of charcoal iron should losses which their credulity has brought of Leadville, Colorado. Geological exam- croachments of coke irons and mild steels manifold causes, among which the foremost an interstratified deposit, whose form- irons, are serious menaces to the future of have been extravagant management, ignor- ation is antedated by the limestone upon this business in a country where timber is

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in metallurgical science, no one can say how soon a cheaper metal may not be made to employment, and the manufacturers are exreplace them. These are serious considerations for those whose capital is invested in kind or another. Through association they Collectively they can employ expert talent without burdensome cost, and by united actien avert some of the dangers which now menace the whole trade.

Should not every branch of the iron trade have such an organization as that which the it is evident to outsiders that it is weakening charcoal iron manufacturers now propose, and should not all such associations be and disruption. A few lessons of this kind branches of the American Iron and Steel Association? Years ago we suggested such a movement, but the time did not seem fa- not to be had recourse to except as a last vorable for the carrying out of our suggestion, though we believe it was favorably regarded by the trade at large. The objects of the American Iron and Steel Association are specific and important. All branches of the trade are represented in its management and membership, and all contribute more or less liberally to its support and the furtherance of its work. Can it not be greatly strengthened and its influence broadened by a movement looking to the establishment of as many sub-organizations, or sections, as there are departments of the eron and steel trades desiring the benefits of organizations of their own? Would not this extension and division of its work add vastly to the importance of the American Iron and Steel Association, and make it far more formidable than now as a bulwark for the defence of American industry against the attacks of its enemies?

Emigration and Labor.

The National Ironworkers' Association of Great Britain, at their conference which has just been held at Manchester, took action which may have an important bearing on the labor market in this country. It should be noted that, unlike the conventions of the ironworkers of this country, the resalts of these meetings-the discussions, reports, &c .- are all given to the public. The accounts of the association showed a fund to its credit of between \$25,000 and \$30,000, and the question was raised whether this fund, or a portion of it, should not be used in assisting members to emigrate. While no definite action was taken on this proposal, it was decided that the members of the lodges should send to the general secretary the names of those who wish to emigrate, and action will be then taken on the question of helping them out of the union funds. A number of the English unions have a standing offer of a bonus, amounting to from \$25 to \$35, to any of their members who will emigrate, so that this idea of relieving the labor market of that country is by no means a new one. It is evident that something must be done to relieve the industrial population of England of its enormous surplus. Many came into the iron trade from agricultural pursuits at the time of the great extension of the English iron industry. Now, when this industry is depressed and thousands are out of work and on the poor rates, they cannot return to the tilling of the land if they would, as agriculture is in a worse state of depression than even the iron industry. The only relief, therefore, seems to be in emigration.

In this connection the question arises, What will be the effect of this emigration on the American labor market? If the emigrants push West and take up unoccupied land and work it, the effect will be beneficial; but if these men emigrate for the reduced the cost of these stoves some 50 or purpose of working at the same trades 60 per cent. below what they were at any they have left in England, it will have a time prior to 1877. At the present time the tendency to overstock the labor market first cost of a fire-brick stove is not much, if here, and send down prices. It will do this any, in excess of a good iron stove of the also if the emigration in any numbers increase an element in our labor that has not by any means been conducive to its peace and prosperity. It is said that the strike at Fall River is the work of a faction of Lan- These considerations are leading to the cashire spinners, who are receiving much higher wages than they ever got at home. and are asking for more. It is also a fact that the most turbulent and unreasonable workmen are those who have been brought up to the ways and sentiments of the English workshops and factories. They are brutal and intolerant, and, generally speaking, are undesirable acquisitions to any trade. There is no doubt however, that large numbers of English ironworkers are looking to this country as a relief from starvation. Letters received here indicate that our high wages-two to three times in excess of what they receive, while the cost of living is much -are tempting them over here. Some sections of the country would welcome them. as many manufacturers believe that almost any tyranny would be preferable to that under which they are laboring. The high wages ruling here in some sections are a strong inducement to these men, and it would not surprise us if the present year saw a large number of English ironworkers on their way to this country.

The strike of the Fall River spinners promises to end in the complete defeat of he misguided men who expected to lock the wheels of a great industry, and keep thousands out of employment until their demands were satisfied. The mills have been filling quite rapidly with spinners during the past fortnight, and numbers of new men arrive Some of these are bought off or "

periencing but little difficulty in running the mills. About half the spinning machintimber lands and charcoal furnaces of one ery of the city is in operation, and during the present week it was expected that can better reach a solution of the problems most of the mills would run on full time. they are now forced to consider, than they Cheap boarding houses have been erected in could hope to through individual action, several of the mill yards, and the new men are thus easily protected against violence. Many of the old spinners are said to be leaving town daily in search of work elsewhere, and while the union maintains a hold front and proclaims its confidence of success, rapidly, and that the result will be its defeat should teach the workingmen prudence, and show them that strikes are dangerous things, expedient. The disposition manifested by workmen in many trades to seize upon the first indications of a revival in business as a pretext for a strike, is more likely than anything else to delay recovery, and prevent such an advance in prices as would enable manufacturers to pay better wages.

Business Matters in Canada.

It is an interesting fact that the last Offcial Gazette reports the smallest number of failures recorded in the Dominion for many months past. There are only four new cases of bankruptcy. The Canadian newspapers speak hopefully of the condition of business, and especially of the outlook. Collections are easier, consumption larger, and recovery, to judge from present indications, near at hand. The crop promise is good, and manufacturers are better satisfied with protection than they would be if the conditions favored a more rapid development and diversification of the country's productive industries. The Steel Works Company at Londonderry, N. S., have given notice to their work-people that they are about to suspend operations. The reason assigned is that the company cannot afford to pay the rates of freight charged by the Intercolonial Railway, on which they are dependent for transportation. It is asserted, however, that the stoppage is a result of the "National policy" which, by imposing a duty on coal has offset the advantages otherwise likely to have resulted from the duty on iron. But whatever the reason, the fact of stoppage without prospect of soon resuming, shows that the business of the company is unprofitable, and that it does not promise much for the immediate future. We hear of no great eagerness on the part of capitalists to engage in manufacturing operations, and there are, so far as we can see, no indications of rapid industrial progress. The country wants more population and more enterprise, and with these it can make protection profitable. Under the circumstances the party in power seems to have overdone it in adopting a general protective tariff. The industries of the country are not vet sufficiently diversified to make such an experiment profitable. A moderate pro tection for half the industries it is now sought to protect, would have been very beneficial. The results of the present policy are, at best, uncertain.

The Whitwell Hot Blast Stoves.

The change in the shape of the Whitwell hot-blast stoves to the style known as that of 1878, or the high stoves, appears to have largely increased their efficiency, as well as reduced their cost. This fact, combined with the decreased cost of materials, has face, while every other element-effective ness, cost of repairs, quality of product, &c. -is largely in favor of the fire-brick stove. adoption of these stoves at nearly every new furnace that is constructed and at many old In addition to the three contracted for at the Powel Furnace, in the Broad Top region, mentioned elsewhere, they are to be adopted at the Lowmoor Furnace, Virginia, which is now building, and also at the fur naces of the Reading Iron Company. Negotiations are in progress also for their erection at several other points in the anthracite region. The three new stoves at McCormick's furnace, near Harrisburg, are nearly completed, and similar stoves will be at once built for No. 2 furnace at the same works. The stoves to be erected at the Powel Furnace will exceed by 5000 square feet of heating surface any Whitwell plant now in the United States. The high stoves of 1876 are also coming into favor in Europe. A recent letter from Mr. W. Whitwell to Mr. J. P. Witherow says: It may interest you to know that the high stoves of 18 by 40 feet, 18 by 50 feet and 18 by 60 feet high are being applied on the Continent. Messrs. Cockerill & Co., of Seraing, who have worked two furnaces on Bessemer direct for the past five years, are now erecting the tall stoves of the 1876 patent. A firm in Austria are doing the same. Our European firms are ordering the valves of the old make from our neighbors, Head, Wrightson & Co., whose facilities for manufacturing them are so great."

There are still some unsettled questions regarding the heat at which it is best to run se and other fire-brick stoves, but as to their superiority and economy over iron stoves at the present cost of construction, there seems to be no question in the mind of the trade.

The Oil Stove Controversy.

We have received the following letter: NEW YORK, July 15, 1879

To the Editor of The Iron Age.—DEAR B: We have noticed in The Metal Worker and also in The Iron Age, articles regarding the oil stove litigation that appeared to be intended to injure us. We cannot assume that you would knowingly be a party to this. While we have no objection to your publishing any circulars that may be sent ou, we do take exception to your drawing adverse editorial conclusions from them without first hearing our side of the question.

The facts are as follows: We are the owners of the Fish and Billings patents, and are advised by our own counsel that they cover every oil stove so far submitted to them. Both of these patents have been in litigation for more than three years, and one of them has been decided and redecided in our favor after determined resistance, by most eminent patent lawyers, and under both patents the United States courts have granted us numerous injunctions. Under these patents we have already effected settle ments with more than 700 dealers vithout suit, and with nearly 100 more after suit, in which cases costs were added to our royalties. We shall continue to pursue this course, requesting a settlement from all parties on a fair basis; but where they rofuse this, we shall sue them, giving what-ever bonds may be necessary to collect any just claim, though it be but \$1. As to the estimate in which our patents are held we can perhaps give you no better idea than to refer you not only to the list of dealers who have settled, but to the list of our licensees, which embraces nearly all the large manufacturers of oil stoves in the country.

In publishing the joint circular of four oil stove manufacturers last week, you stated that they were acting in good faith. Such is not the case. On the contrary, while they have in some cases assumed the defense of suits brought against their customers, they have in every instance, so far as we are in formed, refused to give any customer such a legal guarantee of protection and security as would save him harmless in case of an

adverse decision. Yours, respectfully,
THE KEROSENE LAMP HEATER Co.
By A. H. TIFFT, president. The following circulars would have appeared in our issue of last week had the en received in time :

To Dealers in Kerosene Oil Stores .- We gain warn you against dealing in any oil stoves, except such as are made or licensed by us. We also caution you against accept ing either the verbal, printed or written as surances of infringing manufacturers that they will protect you. The Billings patent No. 45,957 does not ex-

pire until January 17, 1882, and up to that time we shall hold dealers responsible for every infringing stove they have sold or may sell; and as the manufacturers thereof (having given assurances of protection throughout the country) may not be able idemnify all their customers, at the end of protracted and expensive litigation, a bond of indemnity, signed by parties known to you to be thoroughly responsible, would

your only sure protection. Every stove sold after June 17, 1879, that is manufactured under license from us, should have our license tag affixed as follows: "Licensed by the K. L. H. Co., patented, Jan. 17, 1865, under the Billings

As to past infringements, you are re-quested to fill up the blank statement here-with inclosed in such a manner as to show the number of oil stoves bought by you to date, of each different make; each sold and the number now on hand and

of whom bought.
On receipt of this statement we will advise you how many of such stoves have been exempted by payments already made to us by manufacturers or jobbers, and the amount claimed by us for an amicable settlement. We desire to avoid making you any unnecessary trouble and expense, and a prompt at-tention to this matter may save the necesnencing suit against you, the re sult of which would largely increase the amount necessary to a settlement, as the costs and expenses in patent litigation are

heavy.

A reading of the claims of our patents, as recited on the succeeding page, will show you at once that they cover every kerosene stove manufactured.

THE KEROSENE LAMP HEATER CO. THE FISH PATENT NO. REISSUE 7069-REIS-SUED APRIL 18, 1876.

1. The combination, substantially as herein hown and described, of a kerosene oil lamp, deflector or cone, and a metallic heatchamber or shell, adapted to support a vessel to be heated.

2. A kerosene oil lamp heater in which

the deflector or cone of the lamp is arranged in the bottom of a metallic heating chamber or shell that is adapted to support the vessel to be heated. 3. The combination of a kerosene oil

lamp, a deflector or cone, and a metallic heating chamber under the arrangement, substantially as herein shown and described so that the air for the sustenance of the flame in the heater shall be admitted through the bottom of the heater, and the products of combustion shall pass off through a contracted opening in the top of the heater.

THE BILLINGS PATENT NO. 45,957-JANUARY 17, 1865.

I. The use and adaptation of the body or sides of the stove or range D to serve as and perform the office of a flue or chimney over the lamp or oil holder A, substantially as described and for the purposes set forth

2. The attaching of one or more air guides, cones or deflectors in the diaphragm C, and the adjustment of the same in the stove or range F, substantially as described and for the purposes set forth.

4. A non-conductor of heat, used as a acking between the stove and the oil holder, arranged substantially as described the figures above submitted reveal such a

5. The insulation of the lamp or oil holder by non-contact with the heater, stove or debts, another element is added to the grow-range, substantially as described and set ing confidence already manifesting itself,

NEW YORK July 1, 1870. We have granted licenses under the Billings Patent, No. 45,957, to the following named parties, who will affix our license tag as under to all kerosene oil stoves hereafter made by them: Bradley & Hubbard Mfg. Co., West Meriden, Conn.; Florentine Oil Stove Co., New York, N. Y.; Haberman, F., New York, N. Y.; Hull, W. A. & Bro., New York, N. Y.; Myers, Osborn & Co., Cleveland, Ohio; Pool, Geo. & Sons, Brooklyn, N. Y.; Ray, Daisley & Co., Brooklyn, N. Y.; Richmond Stove Co., Norwich, Ct.; Riessner, C. & Co., New York, N. Y.; Tifft & Howard, New York, N. Y.; Tulley, Francis, Rochester, N. Y.; Williams, J. S., Brooklyn, N. Y. as under to all kerosene oil stoves hereafter ooklyn, N. Y.

We again warn the trade that the sale of any kerosene oil stoves not made by our licensees is in violotion of our rights, and that we shall hold each dealer responsible

The following named parties have also settled with us in full for past infringements settled with us in full for past infringements of the Fish and Billings patents, so that no claim will be made by us against any of their customers on stoves made by them: Bradley & Hubbard Mfg. Co., W. A. Hull & Bro., Myers, Osborn & Co., Geo. Pool & Sons, Ray, Daisley & Co., Ray, Forder & Co., Richmond Stove Co., Tifft & Howard, Francis Tulley, Florentine Oil Stove Co. THE KEROSENE LAMP HEATER CO.

A. H. TIFFT, President. Mr. Tifft authorizes us to correct what he assures us was a misstatement in our comment on the joint circular of several oil stove manufacturers, published last week, to the effect that the Kerosene Lamp Heater Company have thus far failed to comply with the requirement to give security for costs in all suits brought by them against dealers. Mr. Tifft says that the company have given such security in every case in which it has been required, and shall continue to do so. They have undertaken in good faith the defense of their patents against all comers, and profess to be quite willing to have the value of the Billings patent tested as soon as possible.

Failures in the United States Since January 1st, 1879.

Messrs. R. G. Dun & Co. send us the following synopsis of their report on failures and the condition of trade for the first half of 1879

The failures for the second quarter in the present year are 1534 in number and \$22;-000,000 in amount of liabilities. These figures are notably less than in any single quarter of the past five years. As compared with the second quarter of 1878, the difference in favor of the last three months is year, marked indicating a decrease of over very marked, indicating a decrease of over 900 failures in that period, with a decline in liabilities of \$26,000,000 in the quarter—a essened loss or lock-up by bad debts of over

\$2,000,000 per week.
In order, however, to show the figures in more detail, and to enable the reader him-self to institute comparisons, the following table is compiled, showing the figures of failures in each second quarter since 1876, also the failures for first six months of each year since that date, together with the aver

	Se	econd Quart	er.	Six	Months.
Year.	No. of Fail- ures.	Amount of Liabilities.	Aver. Liabili- ties.	No. of Fail- ures.	Amount of Liabilities.
1876. 1877. 1878. 1879.	1,794 x,880 2,470 1,534	\$43,771,273 45,068,097 48,753,940 22,066,725	\$24,398 23,972 19,738 14,776	4,600 4,749 5,825 4,058	\$108,415,420 90,606,171 130,832,766 65,779,398

It will be seen by the foregoing that for the first six months of 1879 the failures in the United States were 4058 in number, as the United States were 4050 in number, as against 5825 for the first six months of 1878. The liabilities in the same period of this year are only \$65,000,000, as against \$130,-000,000 for 1 ne first six months of last year The difference in favor of 1879 is, therefore that there have been nearly two thousand (1969) less failures, while the extent of lia-bilities shows a decrease of over \$65,000,000 —precisely one-half of what they were in the first six months of 1878. Not the least gratifying feature is the marked reduction in the average indebtedness of each failure, as shown by the foregoing table.

To show how completely reversed is the condition of trade, so far as indicated by these statistics, as compared with last year, we quote a sentence contained in our circular issued this day one year ago, referring to the failures of the first half of 1878: These figures of increase in failures and liabilities are of very grave import never before, in an equal period in the are of very grave import, tory of the country, have business misfortunes been so numerous, or aggregate amount of loss by bad debts so great." day, in contradistinction to this gloomy pic ture, it is our great good fortune never before in our experience in the compilation of these statistics has the de-crease in mercantile casualties been so marked; in no previous period has the comparison of losses by bad debts been so favorable, as at the present hour.

The indications are numerous on every hand of an improved condition of business, vet none are more significant than the de-Aside from the direct in failures. sses of large sums through misfortunes of this character, the amount locked up in estates awaiting adjustment is a most serious withdrawal from active capital. But even eater than this is the effect upon the confidence so essential to business pursuits. in a greater ratio than any other single circumstance, while the probability of lessened disasters begets faith in the future, and this feeling of safety contributes almost

2. The arrangement of the dispurage and g g. thus forming an air chamber between the oil holder and stove or range, subtween the oil holder and stove or range, subtween the oil holder and for the purposes arrived to intensify the anxious sorved to anxious sorved to anxious sorved to anxious sorved to anxious sor iety always felt when losses by failure are frequent or even probable; but now that marked improvement, as compared with losses chronicled in previous years by bad especially when taken in connection with present steadiness in prices, ment in values of many staples, and the evi-

dent growth in the volume of business.

In relation to the growth in the volume of business in the past six months, as compared with the transactions of the same period in 1878, the circular before us contains returns from all the clearing houses in the country, some 22 in number, located in the chief centers of finance. From figures it appears that the total settlements, or balances to be adjusted between the various banks, indicated an increase of business all over the country exceeding 20 per cent. There are 7 out of the 22 cities whose returns show a de crease in the six months from local causes, which in the next six months may not prevail: but that the total result should in the six months show a gain of one-fifth, notwith-standing these local influences, is next to the failure figures themselves, a very satisfactory showing.

A New Broad Top Furnace, and Broad Top Coke.

An enterprise of some importance in its An enterprise of some importance in its relations to the future iron industry of Pennsylvania, is already under way in the Broad Top region of that State. Mr. Robert H. Powel has just let a contract to Mr. J. P. Witherow, of Pittsburgh, the representative in America of the Whitwell stoves, for the construction of for the construction of a blast furnace on his property. The furnace will be 70 x 18 with three Whitwell stoves of the 1876 feet, with three Whitwell stoves of the 1876 pattern, each 60 x 18 feet, having 13,750 square feet of heating surface, or over 41,000 feet for the plant. It will be blown by two horizontal engines, coupled to one fly-wheel, with blast cylinder 6 x 6 feet, to be built by the Reading Iron Company, and six French or double boilers, the upper boilers being 50 feet long and 40 inches in diameter, and the lower 50 feet long and 36 inches diameter. There will be a combustion chamber 5 feet high under the boilers, and the structure inclosing them will be 16 feet in hight. The engine house is to be 78 feet long, roofed with a wrought-iron water tank. casting house will be 112 x 60 feet. casing nouse will be 112 x oo feet. The chimney will be 175 feet in hight and 8 feet inside diameter. The hoist house will be an iron structure 78 feet high, roofed with corrugated iron. The furnaces will have all of the modern improvements, and will be constructed with a view to a possible in crease in the number of stacks.

This Broad Top coal region, concerning which there has been considerable discus-sion in the past five years, is an isolated deposit on the eastern slope of the Allegheny Mountains, some 25 miles east of the Al-legheny field. The Report of the State Geological Survey of Pennsylvania makes this a part of the Pittsburgh coal bed. The field ecupies about 80 square miles, and affords wo seams well fitted for the production of bright, open, tenacious and strong coke. Coke made from washed coal from this region is used at the furnaces of the Kemble Coal and Iron Company, at Riddlesburg, the ordinary bechive oven being used in the coking. The coke for the furnaces to be coking. The coke for the furnaces to be erected by Mr. Powel will be made in improved Belgian ovens. This will give the new enterprise considerable importance, and furnish data that will be very valuable for comparison. A test of the coal to be used has been made in the Belgian ovens at the Eliza Furnaces, Pittsburgh. The first oven was Furnaces, Pittsburgh. The first oven was drawn on the 1st inst., the result being a yield of over 75.4 per cent; that is, 100 pounds of the washed Broad Top coal gave 75.4 pounds of a splendid hard, compact coke. This surpasses the yield of Connellsville when made in beehive ovens. The loss in washing in this instance we have not been able to learn. At the Kemble Furnace it is, or was in 1875, 11½ per cent. If this is considered the waste in coking, Broad Top will be somewhat in excess of that in coking Connellsville, which is not washed. It is further true that Broad Top coal, coked in beehive ovens, yields in practice, according to Report L of the Pennsylvania Survey, per cent. only, which is no better, if as good, as Connellsville. If the yield of 75.4 per cent. can be maintained in practice, it will be very much in favor of the Belgian ovens.

If the Broad Top coke proves in these ovens to be equal, or very nearly so, to Connellsville, it will at once open up a good trade for this region in supplying those Eastern furnaces which have been using coke as a mixture with anthracite. So far, however, as tests have been made the chances are against it. Mr. Fulton, of Cambria, prepared a table showing the relative value of dif-ferent cokes for blast furnace purposes, which was published in our issue of January 16th, From the experiments of Mr. Fulton it appeared that the hight of a furnace charge that could be borne without crushing. as shown by three samples of Broad Top coke, was 96, 88 and 80 feet, respectively, while Connellsville gave 114 feet. On the other hand, the percentage of cells in the Broad Top is in excess of that in Conne'lsville. se facts will give to Mr. Powel's venture considerable interest, and the results who closely watched both East and West.

The Finances of Western Australia .-The financial condition of the colony of Western Australia is very unsatisfactory, the returns for the last year showing an ex cess of expenditure over revenue to the ex-tent of \$158,000, viz., expenditure, \$930,000, and revenue \$1,088,000. The deficit, how-ever, will be reduced by the repayment out of the recent loan of a sum of \$68,000, advanced on the Champion Bay Railroad. On the other hand tenders have been invited Numerous failures retard business ventures by the Government for the construction of

An Organization of Charcoal Iron Producers.

The Philadelphia North American of the

11th inst. contains the following:
The manufacturers of charcoal pig iron and blooms, unlike other branches of the iron trade, have hitherto been without an organization. Appreciating the advantages of frequent communication with their fellow-manufacturers, some of the leading members of this important branch have re-cently agitated the formation of an association. A call for a meeting was accordingly issued, in pursuance of which representatives of the trade assembled at the Continental Hotel yesterday morning at 10 o'clock. The necessity for more frequent intercourse with one another was conceded by all present, and a general expression of opinion in favor of an organization was manifested. Among the objects to be accomplished by periodical meetings of those in the trade are the improvement of processes of manufacother kinds of fron, and hence they have bullittle opportunity, under ordinary circumstances, of making one another's acquaintance. Their limited trade does not permit them to take advantage of the services of scientific metallurgists. Owing to many circumstances, the past few years have witnessed heavy decline in the quantity of scientific metallurgists. Owing to many circumstances, the past few years have witnessed a heavy decline in the quantity of charcoal pig iron manufactured. These matters were all discussed, and all present felt that it was necessary that something should be done to advance their interests, and that it could only be done through an association. Inroads have been made upon the charcoal pig iron trade by makers of anthracite and coke pig irons, who claim that special qualities of iron can be made which will answer the purposes for which charcoal irons were at one time deemed indispensable. On the other hand, the charcoal iron manufacturers are threatened by the makers of mild steel, who are seeking dispensable. On the other hand, the charcoal iron manufacturers are threatened by the makers of mild steel, who are seeking to supplant bloom irons. All these matters can be thorougly inquired into by an active and wide-awake association, and improvements can be effected by intelligent co-operation which will do much to enable charcoal iron manufacturers not only to hold coal iron manufacturers not only to hold their present trade, but to extend it to its former proportions. The laws of Pennsylformer proportions. The laws of Pennsylvania do not protect this branch of the trade as much as they should.

as much as they should.

A very slight punishment is imposed on persons who willfully set fire to forests, yet every year much valuable timber is wantonly destroyed by hunters, tramps and others. In some places people who do not own a foot of land set fire to forests and

which would in a few years supply the place of the timber cut for charcoal.

Among the persons present at yesterday's meeting were A. Wilhelm, Cornwall, Pa.; Geo. B. Wiestling, Mont Alto, Pa.; J. C. Fuller, Pine Grove Furnace, Pa.; Robert Valentine, Bellefonte, Pa.; A. G. Curtain, Jr., Roland, Pa.; R. H. Lee, Lewistown, Pa.; H. T. Townsend, Philadelphia, Pa.; J. W. Mumper, Barree Furnace, Pa.; W. H. Clymer, Temple, Pa.; J. K. Spang, Lenhartsville, Pa.; Frank McCoy, Milesburg, Pa.; Seidel Bros., Maryville, Pa., C. E. Coffin, Muirkirk, Md.; L. Heber Smith, Joanna Furnace, Pa.; Charles Goodman & Bros., Atglen, Pa. Letters were received from parties in other States sympathizing with the movement.

with the movement.

On motion of Mr. Wiestling, Mr. Valentine was elected president of the preliminary meeting and Mr. Coffin secretary. The following resolutions, presented by Mr. Fuller, were adopted:

"Read-liked That a committee be appointed."

Fuller, were adopted:

"Resolved, That a committee be appointed by the president to draft a constitution and set of by-laws for the organization of the National Association of Charcoal Iron Manufacturers, to report at a meeting to be held on Thursday, the 18th day of September, 1370, at 10 o'clock a. m., in Parlor C, Continental Hotel, Philadelphia.

"Resolved, That to the same committee be referred the nomination of officers for the permanent organization.

ject to their call for an earlier meeting if a sity arises for the same in their judg-

Resolved, That notices be sent to every charcoal iron manufacturer in the United States, inviting them to attend the meeting

and to co-operate with us.

The president appointed Messrs. Fuller, Wiestling, Townsend and Coffin upon the committee. On motion, the president was added to it. The meeting then adjourned.

In a list of Philadelphia exhibitors at Sydney we find the following: Baldwin Locomotive Works, locomotives; Wm. Sellers & Co., iron working machinery; Edgent Iron Works, iron and steel bridges; Edgemo Hon Works, from and steel bridges; A. Whitney & Sons, car wheels and axles; Henry Disston & Sons, saws, files, &c.; Hoopes & Townsend, bolts and nuts; Samuel S. White, dental instruments and materials, Mackellar, Smiths & Jordan, type, &c.; John Lucas & Co., paints; Enterprise Manufacturing Co., specialties in hardware; American Chain Co., iron chains; hardware; American Chain Co., iron chains; J. W. Daughaday & Co., printing presses; Baeder, Adamson & Co., glue, &c.; Goodell & Waters, woodworking machinery; Keystone Bridge Co., bridges; Myers & Ervein, steel forks; Philadelphia Novelty Manufacturing Co., noveities in hardware; American Sewing Machine Co., sewing machines; Yerkes & Plumb, edge tools; Sheble & Fisher, steel forks; Graham, Emlen & Passmore, lawn mowers; D. K. Miller Lock Co., locks; Barrows, Savery & Co., hollowware; P. P. Mast & Co., grain drills; Kinball & Kimball, band sewing machines; Cooper, Jones & Cadbury, brass faucets.

Italy is about to enter upon an era of rail-road building, and though her operations will not be upon a very extensive scale, still American manufacturers might find it worth while to take their wares to that market,

The World's Telegraph System.

The twelfth International Telegraph Conference has lately been in session in London. This body, formerly made up of representatives chosen, as a rule, because of their ex perience in diplomacy, now consists chiefly of practical telegraphers and the working officers of the postal and telegraphic departments of the different governments. The conference, therefore, is not so much of a show concern as it was in other years; but in expert knowledge of the subject, it makes up for any loss of ribbons and

It is easy to understand the need of such a conference at a time when a considerable share of the correspondence of the world, and the most important part of it, is done by telegraph, and when all the nations of the earth are bound together by electric wires. What shall be done with these lines in time of war, and in peace how shall the rates for the transmission of messages be so ture, and an extension of the business in adjusted as to satisfy business interests and avoid the complications of different charcoal pig iron and blooms are necessarily more isolated than the manufacturers of other kinds of iron, and hence they have but present session the main subjects for discussion were to be the policy of employing cussion were to be the policy of employing a new word tariff, and the possibility of fur ther reducing charges.

Leaving out the land lines which connect

it will not be many years before we shall see it in working condition.

To reduce to complete order and symme

To reduce to complete order and symmetry this vast system of telegraphic communication, which has had its chief development within the short space of less than a quarter of a century, is the main business of the International Telegraph Conference. The charges for international telegraphy are still too great, though they have been heavily reduced since the Paris Convention of 1865. That convention abolished the zone system, as it was called, under which each country crossed by a message was divided into zones, the first 50 miles and the succeeding ones about 100 miles in breadth. The principle of mean rates for each country was substi-tuted, and at the same time tariffs were much reduced, the charge for 20 words beburn up the undergrowth, so that grass may spring up afterward to feed their cattle; yet these fires destroy shoots and saplings which would in a few years supply the place of the timber cut for charcoal.

The mean rates for each country was substituted, and at the same time tariffs were much reduced, the charge for 20 words between London and Constantinople, for instance, declining from \$4.75 in 1854 to \$2.25 after the Paris Convention. At the Convention is the convention of the country was substituted, and at the same time tariffs were much reduced, the charge for each country was substituted, and at the same time tariffs were much reduced, the charge for 20 words between London and Constantinople, for instance, declining from \$4.75 in 1854 to \$2.25 after the Paris Convention. tion at St. Petersburgh, in 1875, the princi-ple of mean rates was still further extended so that now a mean charge to cover the tran-sit over any distance in Europe is collected on messages sent to the East.

What it is now desired to bring about in the further development of this principle, so that there shall be a mean telegraph rate of so much per word between the different States of Europe, resembling the mean rate for letters established by the Postal Union. But until science has greatly multiplied the carrying capacity of a single wire, we can-not hope to see the rates for telegraphic dispatches reduced to a level with those dispatches reduced to a level with those charged for the postage of letters. Such a cutting down of prices, as the London fron remarks, would inevitably crowd the telegraphic companies, land and marine, with a mass of messages beyond the power of their existing wires to carry, and require additional cables, which would not be likely to return a profit on the outlay. The hope of the future is in the great increase of the number of messages which may be sent over a wire, and it is not likely to be disappointed.

Technical Education in England.

The advantages of technical education have repermanent organization.

"Resolved, That the present officers of this meeting hold over until the organization of the association is effected and their successors are elected, and that we be subbeen made more apparent in Europe than in the United States, because of the greater port for the past year of the Textile Indus-tries Department of the Yorkshire College, England, endowed by the Clothworkers' Company, of London, will give our readers an idea of the practical character of the inarraction afforded to pupils. It says:
"Five new power looms and 15 large handlooms are now at the disposal of the students, and the whole process is made a study
by both day and evening classes. A loom
was also mounted for weaving Kidderminwas also mounted for weaving Kidderminster carpets, and another for producing heavy-figured nap coatings. The patterns woven during the session amounted to upward of 700, an increase of 300 over the previous one. Each student has the privilege of carrying home in his pattern book a switch of all the 700 patterns, with every particitar as to size of yarn, both warp and weft, seet, plan of weave, picks per inch, &c., giving him an invaluable amount of information for future use. The variety of acc., giving him an invaluable amount of information for future use. The variety of goods woven by the students of the advanced classes included figured cotten warp naps, worsted and woolen trouserings, both in single and double cloths; cotton warp, wool and worsted weft mat-classes, worsted and cotton warp; wool and worsted weft manual cloths, in various kinds of fabrics; plush goods both cut and and worsted west manue cloths, in various kinds of fabries; plush goods, both cut and uncut; feather trimmings, seal skins, ladies' dress goods, fancy vestings and Kidderminster carpets. A considerable number of designs were produced, and thirty of these, ranging from 96 to 384 shafts, were sent in to a competitive examination for prizes. Number of examples given in small weaves, Number of examples given in small weaves, 160; do. do., combinations, 170; number of designs made by the class to compete for prizes offered by the authorities of the college, upward of 50. Numerical summary of the Textile Industries Department of the college for the session: Day students, 35; be evening students, 42; total, 77." Industrial schools of this kind are calculated to afford

pupils a kind of knowledge from which they are shut out by the present system of opera-tion in factories, where, instead of master-ing his craft, the workman becomes an adept in only a single branch of it.

The Cincinnati Exposition.-We have received a very elegant pamphlet containing the prospectus, rules, classification and premium offers of the Cincinnati Industrial Exhibition of 1879. The cover is one of the most tasteful and brilliant specimens of ornamental lithographic printing we have ever seen. We understand that this exhibition gives every promise of being a great success this year, and that it is looked forward to with interest by a large number of intending exhibitors.

Special Notices.

Second-Hand& New Tools FOR SALE.

July List.

The Tools in the following list are all of Wood, Light & Co.'s make, have been used, but are all in good order and will be sold very

low:

Five Engine Lathes, 15 in, swing 6 ft. bed.

Six Engine Lathes, 20 in. swing 7½ ft. bed.

Five Engine Lathes, 20 in. swing, 8 ft. bed.

One Engine Lathe, 21 in. swing 16 ft. bed.

One Engine Lathe, 21 in. swing 16 ft. bed.

One Engine Lathe, 24 in. swing 12 ft. bed.

One Engine Lathe, 24 in. swing 12 ft. bed.

One Engine Lathe, 25 in. swing 12 ft. bed.

One Engine Lathe, 25 in. swing, not geared.

Two Upright Drills, 25 in. swing, not geared.

Two Planers, 32 in. x 30 in. x 6 ft.

One Planer, 32 in. x 30 in. x 10 ft.

One Planer, 42 in. x 36 in. x 15 ft.

One Planer, 42 in. x 36 in. x 15 ft.

One Shaping Machine, 12 in. stroke.

Four Boft Cutters, various sizes.

One Hormontal Boring Lathe.

The following are all new tools to be sold very low, and are all Wood, Lighte & Co.'s

One Engine Lathe, so in. swing, so ft. bed. One Shaping Machine, 14 in. stroke. Seven No. 2 Bolt Cutters. One No. 1 Bolt Cutters, with centers Five No. 2 Bolt Cutters. with center. Also the following miscellaneous Tools:

Also the following miscellaneous Tools:
One Portable Engine, 6 in. cylinder.
One Hand Milling Machine.
One "Pond" Index Milling Machine.
One "Pond" Index Milling Machine.
Two Engine Lathes, 13 in. swing, 6 ft. bed. Two
Engine Lathes, 22 in. swing, 8 ft. bed. One Engine Lathes, 22 in. swing, 8 ft. bed. One Engine Lathes, 23 in. swing, 8 ft. bed. Three Engine
Lathes, 20 in. swing, 8 ft. bed. Three Lathes,
14 in. swing, 4% ft. bed. Three 4-spinled Drills.
One Gear Cutter. One new "Hardaway" Bolt
Heading Machine, to head up to 3 in. bolts. One
new "Hardaway" Bolt Heading Machine to head
up to 1½ in. bolts. A lot of Saw Tables and
Wood Working Machinery.
Please specify which of the above tools you want
and we will forward all particulars.
The above tools will be sold very low, and can be
seen at

The Geo. Place Machinery Agency, 121 Chambers and 103 Reade Sts.,

NEW YORK.

Rolling Mill for Sale

The real estate, machinery and fixtures of the Portland Rolling Mills are offered at private sale until the first of August, after which time, if not disposed of, they will be sold at public auction in the city of Portland.

The property of the company consists of 60 acres of land on 'tide water in the town of Cape Elizabeth, Cumberland County, within ten minutes drive of the city of Portland. Besides the mill buildings the company owns 55 tenements in 28 buildings, one hall used for church purposes, two stores and a thoroughly well fitted office, with fire-proof vault and all modern improvements. All these buildings are in good repair.

provements. All these buildings are in good repair.

The mill contains one io-inch train, and one is-inch train, with all the machinery appertaining to the manufacture of rails and bar Iron. Its capacity is 14,000 tons of iron rails, or 600 tons of merchant iron per year.

The property is provided with a thoroughly-built wharf, at which vessels of 800 tons capacity can lie at low water, and is directly connected by rail with all the railroads centering at Portland.

by rail with a land.

The mill is now in active operation, but possession will be given about the 1st of September. For further particulars, terms, &c, apply to PHILIP HENRY BROWN, Pres't.

Portland, Maine.

Portland, Maine.

For Sale, AT AUCTION, THURSDAY, July 24,

At 2 o'clock,

JOSEPH WARREN, Auctioneer, No. 331 Grove street, Jersey City.

A plot of ground containing 15 city lots, 25 x 100. on Henderson street, between 13th and 14th streets. on renderson street, overween 13th and 14th streets, suitable for manufacturing purposes; located in Jersey City, between the Erie and the Delaware and Lackawanna Railroads. No piling; solid ground. A Spring of water at 14 feet. Suitable for a sugar house or brewery. Convenient to water front and dock. Also, one large dwelling house and machine

shop. Address, A. C. DURBIN.

LEHIGH UNIVERSITY.-TUITION FREE.

Civil, Mechanical and Mining Engineering; Chemistry and Metallurgy; Full Classical Instruction; French and German; English Literature; International and Constitutional Law; Psychology and Christian Evidences. For Registers address The Rev. JOHN M. LEAVITT, D. D. Bethlehem, Pa.

HARDWARE BUSINESS FOR SALE. Located in the county seat of one of the best counties in central Iowa. Population of the town about 700. Established in 183. Three railroads. Stock consists of shelf and heavy Hardware, Wagon and Buggy Wood Stock, Iron, Steel, Nails, Glass, &c. Stock in perfect order-(no old goods), doing a good, safe business. The only stock of the kind in the county. Will invoice from \$7000 to \$9000. Satisfactory reasons given for selling. Address.

Office of The Iron Age, 83 Reade St., New York.

Special Notices.

PARK BENJAMIN'S Scientific Expert Office,

37 Park Row, New York.

PARK BENJAMIN, Ph. D., Editor Appleton's Cyclopædia of Applied Mechanics; late of Scientific American.

ing, Designing, Construction and Selection f Machinery. Editing and Publication of Trade Literature and cientific Works, Expert Mechanical and Scientific Evidence in

Expert Mechanical and Scientific Evidence in Law Suits. Expert Advice on Inventions and on all Scientific and Mechanical Subjects. Engravings, Chemical Analyses, Assays. Factories fitted up. Selection and purchase of Laundry Machinery and Supplies.

Valve Refitting Machines.

All users of Globe Valves should have one. Send for circular and price list. A few good agents wanted to sell on commis

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Pottsville, Pa.

A CENTLEMAN

with 10 years' experience in the manufacture of Merchant Iron and Pig Iron, fully competent to take charge of any department of office work, desires to form a connection with some reliable firm in the Iron or Hardware Trade. References

Address C.
Office of The Iron Age, Cincinnati, Ohio

A PARTY

having an established trade in Chicago, having plenty of room, wishes to get an agency of a good line of goods. Present business is with the Hardware and furniture trade. Is prepared to handle goods on very close margin, and will assume responsibility for all sales made.

Address for two weeks,

CHICAGO AGENCY,

Office of The Iron Age, 83 Reade St., N. Y.

Rolling Mill for Sale,

Lease, or will take a partner; location not ex-celled; ready for immediate business; six months orders ahead; a rare opportunity. Full particu-lars by addressing. K. H., Office of *The Iron Age*, 8₃ Reade St., New York.

Sanderson Bros. Steel Co mber of shares for sale by EDWARD FRITH & SON, 241 Pearl street, New York

For Sale.

One Ferris & Miles Steam Hammer, two-ton, 17-inch cylinder, 48-inch stroke, used six months good as new. Address

J. M. AYER, 72 Washington Street, Chicago, Ill.

For Sale.

The machinery complete of the Chicago Plate and Bar Mill Company, all in first-class order. Will be sold very cheap. Terms easy.

Address
72 Washington Street, Chicago, Ill. Farming and Mineral Property

for Sale.

Four hundred acres, beautifully situated on James River, five miles below Lynchburg, large dwelling, orchard, &c. It adjoins the celebrated Mt. Athos and Chestnut Mountain Iron Mines, covering the same veins. Eighty acres river low grounds. The best quality of farming and grazing lands. Price, \$15,000. Address H. A. OLNEY, Mt. Athos, Campbell, Co., Va.

Hardware Establishment for Sale. Hardware Establishment for Sale.
A rare opportunity to purchase an 18-year established business in one of the most thriving villages in Central New York, with good, clean stock, including Hardware. Paints and Stoves, of about \$5000. Conveniently located to do a jobbing business, which, as well as retailing, has a good and permanent trade. The brick store, built and furnished with cellar and three stories, expressly for the business, can be purchased or leased for a term of years. Address "Hardware,"

Lock Box 1055, Oneida, N. Y.

All the Deck Beams of the old Elevated Rail road on Greenwich street, from Twelfth street to the Battery, in lots to suit purchasers. Also any other part of the ironwork connected with the road, excepting the rails.

Apply to

HARRISON & GILLOON,

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A San Francisco firm of File and Tool makers having an agent constantly traveling among the consumers in the State and West Coast, is desirous of representing some first-class Eastern Houses in the manufacturing hardware trade Address AGENCY, 248 Beale St.,

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For Sale,

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STILES & PARKER PRESS CO., Middletown, Conn.

HARDWARE BUSINESS FOR SALE. The stock and store in a fine town in Western aw York; established over 25 years. Store a rry handsome one, in perfect repair, and built spressly for the business. The stock is an expetionally good and clean one, has no poor goods and will invice about \$4000. Good reasons will be given for selling, "o a good party a rare hance is here presented to secure at once a fine of the present of the secure at once a fine of the present of the secure at once a fine of the present of the secure of ond prosperous business. Address,
HARDWARE, Box 93,
Office of The Iron Age, 83 Reade St., New York

WANTED.

Special Agency for Sheffield, England, and surrounding country, of Machinists' Lathes and Tools

ALBERT HARRISON, Sheffield, England, Great bargains offered to the trade.

JUST PUBLISHED SENT FREE. valuable information for investors. Address BAXTER & Co., Publishers, 17 Wall street, New York.

Special Notices.

One 9-inch Train Rolls,
One 16-inch Train Rolls,
Both with Housings.
One Steam Hammer,
One Pair Shears,
One Lot Steel Ingot Molds.
Three Large Woodward Steam
Pumps,
Three Small Steam Pumps,
Two Holsting Engines,
Three Steam Rollers,
One Lighthall Condenser,
One Surface Condenser,
K Pumps, Low Pressure Gauges,
Hegistering Gauges, &c.

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DANIEL W. RICHARDS & CO., Scrap Iron & Metals,

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Arranged in three parts:

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9 Pemberton Square, Boston, Mass., Issue Licenses to use the Process for the Manufacture of Iron and Steel

n the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces. The use of this Process improves the quality the product, saves fuel and labor, and does not r quire any change in furnace or manner of workin See page 17 of The Iron Age of Oct. 25th, 1377.

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Importers and Auctioneers,
No. 275 George St., Sydney, Australia,
Request correspondence with American manufacturers desirous of being represented in the Australian Colonies or New Zealand.
Consignments solicited and prompt attention
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per cent., through Bank of British North America
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Large Size, Full Leather. \$
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FLOWER PINS.

A new article of light wire, recently patented Patent offered for sale. Correspondence solicited Address

J. H. PLUMMER, 1276 Pacific Street, Brooklyn, N. Y.

of fine light

Malleable and Gray Iron Castings. We can offer spec'al inducements in the way of very superior quality guaranteed, and at fair prices. Being ourselves large consumers and re-quiring the most perfect castings, other work is ensured the same attention.

MALLORY, WHEELER & CO., Bissell & Welles,

Wholesale Hardware Auctioneers,

83 Chambers and 65 Reade Sts., N. Y. Sales held weekly for the trade. Consignments olicited. We refer to the leading Manufacturers

THE IRON LINE.

IRON, IRON ORE, COAL, &c., Between Lake Champlain, New York, Philadel-bia, Pa., Wilmington, Del., and intermediate Joseph Philbrick, 1201 Beach st. Phila., Pa.

To Inventors and Others.

We would be pleased to correspond with any person having a good saleable article which they want manufactured, or any new machine or model they want constructed.

D. GILBERT & SON, 212 Chester St., Philadelphia, Pa.

FOR SALE,

Job Lots and Bankrupt Stocks Hardware.

A. W. WHEELER,

141 Lake St., Chicago, Ill.

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taker The equiv the T and r There keep morts ward quota The

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Brass goo Bismuth... Bronzes... Chains an Copper... Cutlery... Gas fixtur Guns... Hardware Iron, pig, Iron, sheet Railroad b Iron one, te Iron, other Lead, pigs Metal good Old metal. Platina.... Percussion Saddiery... Steel. Silverware Tin, bxs... Tin, 2,388 s Wire

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Trade Report.

Office of The Iron Age, Wednesday Evening, July 16, 1879.

The past week has been one of unusual activity in Wall street, considering the extreme heat and the number of operators absent, and the dealings in the various markets have been characterized by considerable firmness of tone. The money market has been very easy, and rates have ruled in O favor of the borrowers. Call loans have ranged I @ 2 % on pledge of government bonds, and 2 @ 4 % on miscellaneous securi-Mercantile paper is quoted at 31/2 @ ties.

Government bends have developed strength within a few days, partly in sympathy with the London market and partly S on account of the announcement that the First National Bank had concluded the sale to Messrs. J. S. Morgan & Co., of London, through Drexel, Morgan & Co., of the entire remainder of the United States 4 per cents. taken by the syndicate formed in April last. The amount sold was \$12,100,000 at a price equivalent to about 101 1/4, New York quotation. Settlements of bond transactions with the Treasury are going forward smoothly, and no apprehension of disturbance is felt. There need be none, as it is within the power and to the interest of the Treasury to keep the money market easy. Railroad lings per hundredweight on the other side; mortgages have been strong, with an upward tendency. Below we give the closing quotations of governments.

Granger railway shares leading on the prospect of large earnings from the movement of abundant crops. Coal shares are weak, and telegraph shares have declined. We give below the closing quotations of active stocks.

The bank return shows an increase of The bank return shows an increase of are the following, which are shown for the first time: stands at \$10,941,200, against \$23,252,025 at this time last year, and \$20,424,925 at the corresponding period in 1877. The loans show an increase this week of \$5,869,400; the specie is augmented \$81,900; the legal tenders are up \$1,757,300; the deposits other than United States are increased \$5,321,500, and the circulation is up \$33,000.

The following is an analysis of the bank totals of this week compared with that of

	July 5.	July 19.	Con	parisons.
Loans	\$257,082,500	\$262,951,900		\$5,869,400
Specie	19,889,600	19,971,500		81,900
Legal t'nd'rs		5x,304,900	Inc.	1,839,900
Tot. reserve.	69,464,200	71,273,400	Truc.	5,321,500
Deposits	236,007,300	241,320,000	AMG.	5,321,500
Reserve re-	59,001,825	60,332,200	Inc.	1,330,375
Surplus	10,432,375	10,341,900	Inc.	508,825
Circulation.	20,542,900	20,509,900	Dec.	33,000

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

IMPORTS

For the week ended July 12:

merchandise valued as follows:

Dry goods	\$1,296,134	\$960,x05	\$1,304,836
General mdse	5,468,261	3,x54.94x	3,430,557
Total for week.	\$6,764,395	\$4,115,046	\$4,741,393
Prev. reported	176,594,040	148,722,827	158,509,243
Since Jan. 1			\$163,250,636 items of

	Quantity.	Value
Brass goods		\$3,632
Bismuth		4.28x
Bronzes		370
Chains and anchors	6	348
Copper		808
Cutlery		17,678
Gas fixtures		453
Guns		3.328
Hardware		1,358
Iron, pig. tons		1,797
Iron, sheet, tons		4,250
Railroad bars	6.x74	45,684
Iron ose, tons		4,323
Iron, other, tons		37,461
Lead, pigs		5, 181
Metal goods		12,033
Needles		2,934
Old metal		. 82
Platina		1,818
Percussion caps		8,283
Saddlery		603
Steel		2,501
Silverware		383
Tin. bxs		91,596
Tin, 2,388 alaba		13,171
Wire	18	1,855
		1-00

EXPORTS, EXCLUSIVE OF SPECIE.

For week ended July 15: For the week... \$5,154,417 \$5,413,092 \$5,878,670 Prev. reported... 138,968,430 177,162,596 163,899,94

Since Jan. 1....\$144,123,877 \$182,575,688 \$169,778,614 EXPORTS OF SPECIE.

	For the week ended July 12:
I	otal for the week
	otal since January 1, 1879
Ţ	S. Currency 6's Bid. Asked.

Bid.	WHERE OTHER
U. S. Currency 6's 122	134
U. S. 6's 1880 registered104%	10436
U. S. 6's 1880 coupon1041/8	10438
U. S. 6's 1881 registered104%	10478
U S. 6's 1881 coupon 1045	10434
U. S. 5's 1881 registered	102%
U. S. 5'8 1881 coupon104	1041/8
U. S. 416's 1891 registered 105%	100
U. S. 4%'s 1891 coupon	100
U. S. 4'8 1907 registered 103	IOZI/S
U. S. 4's 1907 coupon 101%	1021/2

The following were the closing quotations

or active shares :		
	Bid.	Asked.
American District Telegraph	60	6136
Atlantic and Pacific Telegraph		35%
Boston Air Line		
Canada Southern		56
Col., Chicago and Indiana Central		61/3
Cleve., Col., Cin. and Ind	58	58
Cleveland and Pittsburgh Chicago and Alton	9078	9934
Delaware, Lack, and Western	-R14	-84
Delaware and Hudson Canal	4756	47%

xpress	-Adams	rof
0.5	American	48
66	United States 47½	48
46	Wells, Fargo & Co 97	98
rie	275/8	27
ii Prof	51	51
ort Was	yne	100
annihal	and St. Joseph 2012	
66	Pref 42%	20
omostol		43
linois Co	ke	38
anois Ce	entral	88
RUSHS I	acific 57	58
ansas ai	nd Texas 1434	3.5
ske sho	re 76	76
omsanne	and Nashville 55%	56
ichigan	Central 783%	78
orris an	d Essex 90	90
ew York	Central1814	X 1 8
ew Jerse	by Central 51%	61
orthwes	t 6934	60
8.6	Pref 0756	07
nio and	Mississippi	X S
6.6	" Pref 40	97 15
cific Ma	ail 141/2	14
nania.		152
ricksilve	or 145	15
65	Preferred	38
ck Islan	nd and Pacific 130%	139
Louis	and Iron Mountain 26	26
Louis	Kansas City Northern 17	17
64	Pref 47%	
Louis	and San Francisco 834	47
Louis i		9
David	" Pref 10%	3.1
	55%	55
E	ref 93%	93
andard.		29
tro Tun	mel 4%	76
nion Pac	ific 76	76
abash	35%	39
estern U	nion Telegraph 89%	90

GENERAL HARDWARE.

Business, owing to the very warm weather prevailing, is lighter this week than last, and few changes in lists or discounts have Manufacturers' Standard List of Square and been made.

In foreign Hardware we hear of a quiet time generally. The price of Armitage "Mouse-hole" Anvils has declined two shillings per hundredweight on the other side; pound.

Mallory, Wheeler & Co., New Haven, The stock market has been strong, the Conn., have issued, under date of 1st inst., a condensed list of Padlocks, containing, in addition to the goods presented in their former list, all the new patterns since added. They also issue an appendix in which their new styles of Padlocks are very handsomely illustrated. Among the goods illustrated

PADLOCKS.	
ı Key. Per doz.	2 Keys. Per doz.
No. 1052, 214 in., Brass Drop and Bushing, Revolving Key Pin, Flat Steel Key, Self-Locking,	
Spring Shackle	\$3.88
Shackle 4-co No. 1054. 2½ in., Brass Bushed, Double Chamber, Revolving Key Pin, Double-Bitted Flat Steel Key, Self-Locking, Spring	4.75
Shackle 5.00 No. 1055, 2½ in., Brass Bushed, Fancy Engraved Drop, Double Chamber, Revolving Key Pin, Double-Bitted Flat Steel Key,	5-75
Golf Looking Spring Shookle	4

Self-Locking, Spring Shackle.. 5.50 6.25 Put up in one-half dozen boxes, keys all different. No changes have been made in lists or discounts. They announce that they will soon issue a complete revised list of Door Locks, Knobs, &c., showing reduced prices. Sar gent & Co. are their agents in this city.

The manufacturers of Bolts and Nuts at a recent meeting adopted the following revised price lists for Machine Bolts, Bolt Ends, Forged Set Screws and Tap Bolts, Wood or instant. Lag Screws, Skein Screws, Square and Hexagon Nuts and Washers. This list shows a slight advance on the former one, and the classification is considerably changed. Hereafter all Machine Bolts and Lag Screws up to 20 inches in length, will be sold by the hundred instead of by the pound as formerly. The regular discounts to apply to this list

are:						Di	s. ¥	cen
Machine Bolts								7
Bolt Ends								2
Forged Set Sc	rews and	Tap	Bo	ltn.				7
Wood or Lag	Screws							7
Skein Screws.	*********							7
Square and Washers, 8¢	off list.	Nut	a, 85	01	Th	5£.		
Manufactures	s' Stande	ard .	List	oj	M	ach	ine	Bolt
with Square	Heads a	nd N	Tuta.	F	inis	hed	Po	rints.

	-					-			
L'gth.	34	5-16	36	7-16	36	2-16 16	34	34	1
x36	2.80	3.20	3.60	4.60	5.00	7.90	10.50	14.00	22.0
		3.35		4.00	5.30			15.80	
234				5,90	5.60			16,60	
3	3.10	3.65	4.20	5.50	5.90			17.50	
33/2	3.20	3.80	4.40	5.80	6,30			18.30	
4	3.30	3.05	4.60	6.10	6.50			19.20	
436				6.40	6,80			20.00	
5				6.70	7.10	10.70	14.70	20.90	20.7
536	3.60	4.40	5.20	7.00	7.40			31.70	
6	3.70	4.55	5.40	7.30	7.70	11.70	15.00	22.60	31.0
614	3.80	4.70	5.60	7.60	8.00	13,20	16,50	23.40	33.0
7	3.90	4.85	5.80	7.90	8.30	12.70	17.10	24.30	34. I
71/2				8.20	8.60	13.20	17.70	25.10	35.2
8	4.10	5.15	6.90	8.50	8.90	13.70	18.30	26.00	36.3
9			6.60	9.10	9.50	14.75	19.50	27.70	38.5
10			7.00	9.70	10,10	15.75	20.70	29.40	40.7
13			7.40	10.30	10.70	16.75	21.90	31.10	42.9
13	0 .0		7.80	10.90	11.30	17.75	23.10	32.80	45.1
13					11.90	18.75	24.30	34.50	47-3
14					12,50	19.75	25.50	36.20	49-5
x5					13.10	20.75	36.70	37.90	51.7
x6					13.70	21.75	27.90	39.60	53.9
17								41.30	
18								43.00	
¥9								44.70	
90				1111	16,10	25.75	32.70	46.40	62.7

Bolts with Hexagon Heads or Hexagon Nuts, ro per cent. extra.

If both Hexagon Heads and Hexagon Nuts, se and per cent. extra.

Manufacturers' Standard List of Bolt Ends, with Square Nuts.

	Price	per p	ound	l.			
Size of iron5-16 Length 6 Price per lb. 28	36 7 24	7-16 7 80	36 8 16	56 9 14	34 20 22	76 11 19	1 19 19
Size of iron. 1/4 Length 13 Price per lb. 13	136 14 14	136 15 14	136 16 14	15% 17 16	134 18 16	13% 10 15	9 20 16
Manufacturers' Serv		dard ind T			Forg	ged	Set

	1	Price	per	100.			
h.	34	5-16	36	7-16	36	9-16 85%	
	3.50	2.80	3.30	3.90	4.50	6.60	

78	1-10 78	9-10 01/18	74	person or persons manufacturing
. 40 . 50 . 60 . 70 . 80	3.90 4.5 4.00 4.7 4.10 4.9 4.20 5.2 4.30 5.3 4.40 5.5 4.50 5.7	0 6.80 0 7.00 0 7.30 0 7.40 0 7.60	8.90 9.30 9.50 9.80 10.10 10.40	any article that infringes on my radio patent. Parties selling an article the are just as liable as parties that ture. Parties selling an importbat infringes on this patent are just as a selling an import at infringes on this patent are just as a selling an import at infringes on this patent are just as a selling an important are just as a selling an article that are just as a selling an important are just as a selling

Manufact	urers Scre	2008,	andan with Price	Squa	re H	Lag	as though selling an article manufacthis country. A. A. W. Sole manufacturer of Weeks' Grape		
Length.	5-16	36	7-16	34	9-16 \$ 56	34	36	1	and Flower Picker. Some makers report a slight impro
1½ 2. 2½	3.10	3.30	4.25	4.60	6.50	10.00			in the demand and general tone of t market, while others see no differ compared with the preceding week.

Manufacturers' Standard List of Skein Screws, with Square Heads.

	Price	per 10	00,		
Length.	36	7-16	36	9-16 & 3%	3/4
3	3.70		*****		
31/2	3.90	5.00		*** ***	
4	4.10	5.25	5.80		
434	4.30	5.50	6.10		
5	4.50	5.75	6.40	8.90	12.50
534	4.70	6.00	6.70	9.30	13.00
6	4.90	6.25	7.00	9.70	13.50
61/4		6.50	7.30	10.10	14.00
7		6.75	7.60	10.50	14.50
736			7.90	10.00	15 00
8			8.20	11.30	15.50
81/4				11.70	16.00
9				12.10	16.50
914				12.50	17.00
10				12.90	17.50

Square Nuts.	-	Howagon h	Tento
		Hexagon N	
Dimensions. P		Dimensions.	
% x % x 7-32	20	1/2 × 1/4 × 7-32	3
% X 5-16 X 9-32		% X 5-16 X 9-32.	2
34 × 36 × 11 32	IS	% X 36 X 11-32.	
% x 7-16 x 13-32	.13/2	% X 7-16 X 13-52	3
36 x 1/2 x 7-16	.13%	% X % X 7-16 .	X
1 X 1/2 X 7-16	12%	1 X 1/2 X 7-16	I
11/2 X 9-16 X 1/2	. 123%	11/4 X 9-16 X 1/4.	x
11/8 X 1/8 X 9-16	. 1236	1% X % X 9-16.	
134 X 34 X 9-16	12	1% X % X 9-16.	X
134 X 34 X 21-32		1% X % X 9-16.	X
1% X ¼ X 21-32		1% X 1/4 X 21-32	
15% X % X 25-32	xx36	1½ x ¾ x 21-32	X436
1 1/4 X 1/8 X 25-32	xx 12	11/2 X 1/2 X 21-32	X4 %
134 X 1 X 76	. 2236	1% X % X 25-32	
X I X %	. xx36	150 X 1 X 25-32.	X436
2 X 11/6 X 15-16	2236	1% X 1 X %	X436
21/4 X 13/4 X 15-16	. 1136	13/4 X 13/6 X 76	3456
2 X 1 1 X 1 1-16	1216	2 X 11/4 X 15-16.	
2 × 1 1 × 1 1-16	1234	3% X 136 X 1 1-1	6 T = 86
234 X 136 X 1 3-16	1216	2% X 1% X 1 3-1	6 15%
3 X 11/2 X 1-516	12	23/4 X 15/4 X 1 5-1	6 75%
3% X 156 X 1 7-16	7.3	3 X 134 X 1 7-16.	7/
3% X 1% X 1 9-16		3% X 1% X 1 9-1	
3% X 1% X 1 11-16	7.4	3% X 2 X 1 11-16	
X 2 X 1 13-16		3% X 2 X 1 13-16	
			-
Sizes not enumer	rated o	on above lists	will be

charged extra, at discretion of the manufacturer.

Dia m	Size of hole.	Thickness. Wire gauge	Size of bolt.	Price pe
36	34	No. 18	3-16	95
23	5-16	" 16	25	10
3%	36	** 16	5-16	17
8	7-16	11 14	36	15
13/9	36	X.6	7-16	15
x 36	9-16	16 19	7-16	15
x36	56	** 30	9-16	x23/4
134	11-16	41 10	26	1236
9	13 16	11 10	25	3356
276	15-16	9	,73	1276
236	136	" 0	x3/6	1236
3	136	9	x36	xa34
3 13	156	41 8	x36	13%
374	136	8	152	13%
436	23/8	11 B	2	13%

Washers of irregular sizes, made to order, will be charged extra at discretion of the manufac-The above list went into effect on the 15th

We have received the following circulars:

Cincinnati, O, July 1, 1879.

To the Trade.—We have this day established an office for the sale of the celebrated "American Fruit and Jelly Presses," at 79 "American Fruit and Jelly Presses," at 79 Chambers street, New York, and shall keep in stock a full assortment of the goods so long and favorally known. We have secured the services of Mr. W. H. Quinn as manager, who will devote his time and attention to the demand of the jobbing and export trade. Very respectfully. port trade. Very respectfully,
W. T. Simpson & Co.

W. C. Duyckinck, No. 50 John street, has been appointed by the Jackson Manufacturing Co., of Harrisburg, Pa., exclusive sales agent for their Seamless Steel Wheelbarrows. &c., and in a circular, under date of 1st inst., they request all orders and correspond-

ence to be addressed to him. The following circular explains itself: NOTICE TO THE TRADE.

82 JOHN STREET, NEW YORK, July 9, 1879. Whereas, certain unprincipled parties are infringing on my rights under Valentine's patent, No. 49,178 of August, 1865, for grape, fruit and flower picker. I beg leave to call your attention to the following

The claim of said patent is for a cutting and grasping instrument with a yielding

As will be seen, the above claim is very broad, and no arrangement of spring, rub-ber or other yielding appliance can be used in connection with a pair of shears or cut-ting instrument without infringing upon

I hereby give notice that I own the sole and exclusive right to manufacture the said fruit and flower picker for the unexpired term of the said patent, and, as I believe that if a patent is worth owning it is worth protecting, I hereby give notice that I will prosecute, to the full extent of the law, any rights under

and sav that business is very dull. We continue to quote 10d, \$2.25 net, but buyers of round lots could shade the card rate a trifle.

IRON.

American Pig.-The condition of the market is unchanged since our last writing, and transactions are limited, owing, in considerable measure, to the difficulty experienced in placing orders for early delivery and the unwillingness of makers to accept orders for future delivery, except at prices ruling at date of shipment. We hear of considerable business in lots of 100 to 500 tons, but no transaction of large magnitude has been reported during the week. We quote as before: Foundry No. 1, \$19 @ \$20; Foundry No. 2, \$18, and Gray Forge, \$16.50.

Scotch Pig.—Scotch Iron is not moving as briskly as importers would like to see it. although sales are reported since our last of 600 tons Carnbroe, 100 tons Coltness and 100 tons Glengarnock, all on private terms. The arrivals during the week are about 300 tons. We quote: Eglinton, \$19; Coltness, \$21; Ptlm., gals.213,764 19,000 Glengarnock, \$20, and Carnbroe, \$19.50.

Rails.-The demand for both Steel and Iron Rails continues in the active condition so frequently commented upon in these col-Without being able to trace any large purchase since our last writing, it is rumored and generally believed that considerable business for next year's delivery has been placed. We quote Steel, at tidewater, \$45 @ \$48, according to delivery, and Iron, \$30 @ \$40. at mill.

Old Rails.—There is considerable inquiry for Old Rails, which are quoted at \$24 @ \$25 here. No transactions worthy of mention are reported.

Scrap.-We hear of a sale of 500 tons No. 1 Wrought on private terms, and quote the same from vard. \$24.

Manufactured Iron.-In this departnent of the Iron trade we notice remarkable activity, taking the season into consideration. The mills east of the Alleghenies are all reported full of orders, and difficulty is experienced in placing orders for early shipment. Prices, too, are steadily tending upward, and store prices here have advanced 1-10¢ during the week for Bars. Bar Iron, from store, is quoted 1.9¢ for Common and 2.1¢ for Refined.

METALS.

Copper.—The market has been remarkably quiet, sales being limited to 25,000 @ 30,000 ß Lake Superior at 16¢ @ 16½¢. At the close 16¢ is bid, and 16½¢ @ 16½¢ asked. Baltimore Copper may be quoted at the same figure, nominally. Saturday's cable dispatch from London reports the market there £1 lower. Chili Bars are therefore worth £55, and Best Selected, £61. Mail advices have reached us from London to the 2d instant, when the market London to the 2d instant, when the market was, if anything, a little firmer at £62 for Best Selected. No later telegrams have been Best Selected. No later telegrams have been received from the West Coast. There is no change in the combination prices of Manufactured Copper. We quote New Sheathing Copper, 22¢; Braziers' 24¢, and Bolts, 24¢; Bottoms, 26¢; American Yellow Sheathing Metal 13½¢; Yellow Metal Bolts, 20¢, and English Yellow Sheathing Metal, 12¢ @ 12½¢; Bond 12 We. in bond.

Tin .- Since our last report the market ol, dated Mach'y, cs.... and ditto Ternes, \$4.90 (@ \$5.12½. We receive the ensuing from Liverpool, dated July 3: "The market is quite without life. No eagerness is manifested by buyers or sellers, and, consequently, we have no change to note in values. The quarterly meetings of the trade at Gloucester and Bir-mingham take place next week, when it will be seen how far makers are in earnest in their professed determination to further di-minish output rather than submit to lower prices." By cable there is nothing new.

Lead .- This metal has been displaying additional activity and strength. So far as we have been able to ascertain, the upward tendency which has been developed is due to three causes, viz.: The concentration of the stock in a few hands of large holders, to a partial falling off in the supply, and finally to an increased trade demand. These holders disposed since our last of 800 tons at 4¢, and have since then advanced the price to 4.10¢, at which it would seem some 100 to 200 tons and 4.20¢ for Refined. In the latter there is very little doing. The tendency in England on July 2 was still rather downward than otherwise, but this has no influence on our market, such as we are situated, with little prospect of large arrivals for the next 60 or 90 days. Our manufacturers for the time being are fairly supplied, although their stocks are not very large. Manufactured Lead is unchanged. We quote: Bar, 5¢; Pipe, 5½¢; Sheet, 6¢; Tin-lined Pipe, 12¢; No. 1 Solder, 10¢, all less 10 % to the trade.

Spelter and Zinc.—Domestic Spelter remains very firm at 4% = 4%. It seems
that Western ores are held at high prices by
miners; hence manufacturers of the metal

actured in cannot do otherwise than ask higher prices.

Where, The falling off in the Lead mining of Missouri is given as a cause for the decrease of the supply of Zinc Ores, the latter being largely supply of Zinc Ores, the latter being largely taken out from the same workings. The unremunerative character of the Lead mining of that region has therefore a tendency to cut off the supply of Zince Ores. At least this is the version we get from one authoritative quarter, while another well-versed party assures us that the rise in Spelter is due to the voluntary or enforced retirement of many smelters, owing to losses incurred in the manufacture of Zinc, and that this decreased production has been the natural cause of the improvement. There is all along a pretty we quote Refined, 8¢ @ 8¼¢; Silesian, 5½¢ @ 5¼¢, and Bergenport from Lehigh Ore, 9¢. There is nothing new from Europe. Sheet Zinc is worth 6½¢.

Nickel.-We hear of no change : the demand remains moderately active at \$1.25. Antimony-Is for the moment a little neglected at 111/2¢ @ 113/4.

EXPORTS Stettin. Oporto. Ptlm., gals.423,170\$34,600 Ptlm., gals.100,790 \$8,600 Sew. mach.,cs 1 35 Hovig. Pirœus. Ptlm., gals. . 73,815 5,904 Ptlm., gals, .94,000 9,990 Stockholm. Ptlm., gals, .69,069 5,800 Trieste. Ptlm., gals. 373,931 31,349 Amsterdam. Alexandria. Ptlm., gals. 150,560 15,000 Danzig. Constantinople. Ptlm., gals. 131,475 10,520 Ptim., gals. 113,690 9,664 Bergen. Ptlm., gals. 108,943 8,443 Mexico. Hamburg.

Bremen.

Rotterdam.

Antwerp.

Belfast.

London.

Grindstones. 14
Pumps, pkgs. 5
Mach'y, pkgs. 39
Ag. imp., pkgs. 39
Ag. imp., pkgs. 39
Ag. imp., pkgs. 39
Glassware, cs. 3
Coal, tons. 100
Muskets, cs. 18
Quicksil, flks. 6
Sew. mach., cs. 141
Carbines, cs. 17
Cutlery, cs. 35
Notions, case. 1
Iron, pkgs. 18 Bremen.
Ptlm., gals. 684,765 52,900
Tinware, cs. . . . 1,890
Ag. imp., pkgs 50 550
Tinware, cs. . . 5 239
Cars . . . 4 3,600
Hdw., cs. . . . 33 948 504 900 92 928 180 Central America.

Hdw., cs. 46 393 Ptlm., gals. 750 79 Metal, cs. 3 253 Pump. 1 7,206 Mach'y, cs. 11 250 Bridges. 17 4,493 Cartridges. 13 240 Notions cs. 340 Ptlm., gals.739,200 60,900 Dutch East Indies. Ptlm., gals.301,700 36,679 Catridges 14
Notions, cs. 3
Cutlery, cs. 9
Nails, kegs. 35
Powder, lbs. 1912
Iron, barr, 174
Tel. mil., cs. 1
Mf. iron, pkgs 11
Rifles, cs. 9 Ptlm., gals.285,540 19,000

Brazil. Mf. iron, pkgs 163 1,964 Hdw., cs..... 78 963 Ag. imp.,pkgs 124 1,202 Irons, cs..... 250 7,387 Cutlery, cs... 25

Bristol. Slates, cs.... 4 40 Ptlm., gals.139,979 11,759 Glassware, cs. 7 175 Cuba. Hdw., pkgs... rrs Ptim., gals... 850 Mach'y, pkgs. 387 Ag, imp., pgs. 36 Hull. Ptim., gals. 129,842 10,897 Hdw., cs.... 24 902 Mach'y, cs.... 75 13,335 Wire, pkgs... 50 500 Glassware, cs. 6 1440 Ag. imp., pkgs 145 21,554

Mach y, pkgs. 387 Ag, imp., pgs. 26 R. R. mtls. pgs. 1294 Iron, pkgs. 107 Sew. mach.cs. 17 Nails, kegs. 750 Glassw'e, pkgs. 12 Gas meters, cs. 3 Scales, pkgs. 20 Wire, pkgs. 20 British North American Colonies.
Coal, tons 1140 3,650 Porto Rico. British East Indies. Ptlm., gais...8000 Ptlm., gals. 361,220 50,000 Africa.

Gl'ssw're, pgs x Ptlm., gals...7000 British Guiana. Ptlm., gals...7500 725 Liverpoot. Hayti.

Cutlery, pkgs.
Steel, pkgs.
Mach'y, pkgs.
Tin, bxs.
Tron, pkgs.
Cartridges, cs.
Strucks. Mach'y, es... 6 682 200 Hdw., es... 3 1,269 Lub. oil, gals 71 30 2,046 Belting, es... 6 615 Ox. zinc, bbls. 20 147 Ag. mp., pkgs 2 101 Iron rolls, es.. 2 647 Needles, case. 2 2,487 French West Indies. Glassw're, cs.. 22 182 Ptlm., gals..22,000 2,295 Sew. mach., cs 19 205 Messina. Nails, kegs... 366 986 Mf. iron, pkgs 79 201 Pumps, pkgs. 3 48 Springs, cs... 2 148 Arms, cs..... 2 Powder, pkgs 36 Venezuela.

Mf. fron, pkgs 79 201
Pumps, pkgs 3 48
Springs, cs... 2 148
Springs, cs... 13 95
Coal, tons... 51 148
Ptlm, gals... 33,323.33792
Iron safes... 2 63
Sew.mach., cs 5 144
Glassware, cs. 191 1,210 Sew. mach. cs t15 2,712 Wringers, cs. 3 69 Notions, cs... 4 340 Pitdware, pgs s 200 Lead, bags... 10 50 Lead, bags... 10 Revolvers, cs. 1 Mf. iron, pkgs 100 Nails, bxs... 5 Hdw., pkgs... 65 Mach y, pkgs... 13 Ptlm., gals... 13,550 Glassw're, pgs... 12 Steel, pkgs... 20 Shot, bags... 17 Iron, pkgs... 64 Nails, kegs... 13 Argentine Republic. Ag. imp., pkg8 29 3,550 Mach'y, cs... 6 400 Copper, csks., 120 22,500

Havre.

Ag. imp., pkg8 29 3,550
Mach'y, c8.... 6 400
Copper, c8ks... 120 225,500
Cette.
Ptlm., gals.106,631 6,192
Ptlm., gals.106,631 6,192
Ptlm., gals.106,780 27,200
Carthagens.
Ptlm., gals.51,440 4,600
Ptlm., gals.51,440 4,600
Ptlm., gals.51,440 4,600
Ptlm.

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IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending

_	, for the week charing
July 15, 1879:	
Hardware.	Woolley W. W.
	Wire netting, rolls,
Aleo Miguel, Emery, csk., 1	Order,
Emery, csk., 1 Allen R. H. & Co.	Arms, cs. o
Machinery, case, i	Arms, cs., o Chains, csks., 20
Bilhuber E.	Chains, Csks., 20 Files, cask, 1 Grindstones, 113 Gun barrels, cs., 4 Gun cape, cs., 12 Hdw., csks., 5 Hdw., nkcs., 42
Ironware, case, 1 Blumenthal A. & S.	Grindstones, 113
Mdse., pkgs , 42 Boker Hermann & Co.	Gun cang. ca., 4
Boker Hermann & Co.	Hdw., csks., 5
Hdw., csks., 1005	Hdw., pkgs., 43
Hdw., cs., 22 Charles R. P.	Hdw., pkgs., 43 Hdw., qr. esks., 10 Isinglass, bales, 2
Grindstones, 2217	Per. caps, cs., 10
Eddy Geo. M. & Co.	Wads, cs., 12
Grindstones, 2217 Eddy Geo. M. & Co. Mdse., pkgs, 2 Lrie and North Shore	
Erie and North Shore Line, Mdse., pkgs., 3 Folsom H. & D. Mdse., pkgs., 9 Friedmann & Lauter jung.	Iron.
Mdse. pkgs. 3	Hurst F. W. J. Scrap iron, small
Folsom H. & D.	Scrap iron, small
Mdse., pkgs., 9	quantity Irwin R. & Co. Pig, tons, 100 Marvel W. D.
Friedmann & Lauter	Pig. tons. 100
jung, Mdse., pkgs., 3 Graef Cutlery Co. Mdse., pkgs., 3	Marvel W. D.
Graef Cutlery Co.	Ore, tons, 1078
Mdse., pkgs., 3	McCoy & Co.
Hecht Bros.	Ore, tons, 1078 McCoy & Co. Bundles, 756 Middleton & Co.
Harrmann H & Co.	Old iron, case, a
Mdse., pkgs., 31	Old iron, case, a Mosher H. M.
Hecht Bros. Mdse., pkge., 1 Herrmann H. & Co. Mdse., pkgs., 31 Horsman E. J. Hdw., case, 2	Har. r
Hdw., case, a	Bundles, 15 Cases, 5
Howard, Sanger & Co.,	Canks, 2
Mdse., pkgs., 13	Naylor & Co.
Hunter, Keller & Co.	Bundles, 335
Hdw., cs., 7	Prosser Thos. & Co.
Horsman E. J. Hdw., case, J. Hdw., case, S. Howard, Sanger & Co., Hdw., pkgs., 3 Mdse., pkgs., 13 Hunter, Keller & Co. Hdw., cs., 7 Hutchinson J. W. Guns, cs., 5	Iron tubes, bdls., 14
Guns, cs., 5 Lamarche H. Arms, cs., 4	Naylor & Co. Bundles, 335 Spiegel, tons, 220/2 Prosser Thos. & Co. Iron tubes, bdls., 14 Axle for st'mboat, 1 Locomotive tires, 16 Seligman J. & W.
Arms, cs., 4 Livingstone W. & F.	Locomotive tires, 16 Seligman J. & W. Rails, 3794
Livingstone W. & F.	Seligman J. & W.
Grindstones, 609 Grindstones, cks., 11	
Grindstones, cks., 11 London and Hanseatic	Bars, 575 Pig, tons, 100 Spiegel, tons, 250
	Pig, tons, 100
Bank, Isinglass, cs., 6 Mason John W. & Co. Wire rope, reels, 2 McCoy & Co. Hdw., cs., 3 Mdse., pkgs., 13 Hdw., csks., 3 McKinless John A. Hdw., ckgs., 2	Spiegel, tons, 250
Wire rope rooks	Metals.
McCov & Co.	Cort N. L.
Hdw., cs., 3	Tin plates, bxs., 206
Mdse., pkgs., 13	Tin plates, bxs., 206 Cortis R. J. Tin plates, bxs., 1545 Francklyn C. G. Tin plates, bxs., 2760 Henderson Bros., Bronze, case, r
McKinless John A	Francklyn C G
Hdw., rkgs., 2	Tin plates, bxs., 2760
Hdw., rkgs., 2 Merchants Dispatch Co.	Henderson Bros.,
Hdw., cs., 7 Hdw., cask, 1	Bronze, case, r Hurst F. W. J.
Mitchell Vance & Co.	Tin slab v
Mdse., pkgs., 4	Jex Wm. & Co.
Montgomery J. M.	Tin, slab, z Jex Wm. & Co. Old brass, box, z Lamarche H.
Files, csks , 2	
Perkins & Co.	Rolled zinc, caks., 70 Macy's Josiah Sons,
Hdw., cs., 7 Hdw., cask, 1 Mitchell, Vance & Co. Mdse, pkgs, 4 Montgomery J. M. Files, cs., 7 Wire, cs., 7 Perkins & Co. Coal, tons, 2162 Schoverling, Daly & Gales,	Macy's Josiah Sons, Zinc oxide, bbls., 100 Meyer G. A. & E. Zinc oxide, csks., 200 Naylor & Co. Tin plates, bxs., 2722 Nevada Bank, Tin plates, bxs., 2603
Schoverling, Daly &	Meyer G. A. & E.
Gales,	Navior & Co
Mdse., p.zgs., 2 Schuyler, Hartley &	Tin plates, bys., 2222
Graham.	Nevada Bank,
Mdse., pkg*., 8 Squires H. C.	Tin plates, bxs., 2593
	Phelps, Dodge & Co.
Guns, case, r Strasburger, Pfeisfer &	Tin plates, bxs., 2593 Phelps, Dodge & Co. Tin plates, bxs., 8684 Black taggers, bxs.,
Co.	
Hdw., pkge., I Stroud & Titus, Hdw., pkgs., 2 Thompson C. M. Wire rope, caka., 20 Toplitz & Co.	Tin, ingots, 228 St. Louis Beef Canning
Hdw pkgs	St. Louis Beef Canning Co.
Thompson C. M.	Tin plates, bxs., 340
Wire rope, caks., 20	Tin plates, bxs., 340 Western Transportation
Toplitz & Co.	Co.
Caps, cs., 13 Volbrath Jacob T. Crucibles, caks., 2	Tin plates, hxs., 180 Order,
Crucibles, caks, a	Antimony cake 62
Ward Asune.	Old copper, box, 1 Tinfoil, cs., 25 Tin, ingots, 600 Tin plates, bxs., 5000
Cutlery, cs., 15 Wetzlar M.	Tinfoil, cs., 25
Wetzlar M. Ironware, cs., 26	Tin, ingots, 600
Atomwate, on, 20	Lin pintees, oas, 5000

Wetzlar M.
Ironware, cs., 26
Wiebusch & Hilger
Hdw. Co.
Anvils, 402
Ironware, cs., 32
Witte John G. & Bros.
Mdse., pkgs., 6
Wolff H. & Co.
Hdw., cs., 1
Mdse., pkgs., 2
Wolff R. H. & Co.
Rolled wire, pkgs., 9
944

Woodruff A. J. & Co. Hdw., cs., 6

OLD METALS, PAPER STOCK, &c.

There is very little activity in the Old Metal market this week. Prices stand unchanged since our last report, with the exception of that of Lead, in which there is a trifling advance. The Rag and Paper Stock market is duller than ever, and we note a downward tendency in prices.

, 20	The purchasing price for Old Metals are as fo	s offere	ed by	de	aler
113	Copper, heavy	per fb.	\$0.12	(3)	* * *
CB., 4	Copper Bottoms	6.6	. TO	0	
, X2	Yellow Metal	#8 TD	.08	60	81
5	Brass, heavy	6.6	.08	60	.08
	Brass, light	6.6	.07	(A)	
43 ks., 10	Composition, heavy	6.6	. TO	0	
es, 2	Lead, solid	4.6	.0236	00	.02
, 10	Tea Lead	6.6	.0214	(Th.	.02
9 80	TOR APORO	4.6	3/	0	,

Stove Plate	4.0	30	ion	
Stove Plate	6+	.50	0	
The prices current for follows:	Rags,	&c.,	are	8.8

The prices current for Ra	igs, &c., are as
follows:	
Canvas, Linen	
White Cotton, New	" 4%c. @
" No. 2	179 C. UD
White, No. 1	3-20. (4) 4
No. 2	274 C. QD 272 C
Seconds	18 m. 1/2c. @
Mixed, Woolen	8 C. C. 3 C.
Soft, do	079C. Up C.
Mixed Rags	2 C. CD 3 C.
Gunny Jagging	3 0, 00
Jute butts	3-2 C 6B
Kentucky bagging	2780. 60
Book Stock	2 C. 49 272C.
Newspapers	178 C. Up A79 C.
Waste Paper and Scraps	% C. (D)
Kentucky Bale Rope	4 Co CD xxxx
Tarred Shaking	1 6, 49 1746.
Grass Rove	11 @ 2%C.

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St. | PHILADELPHIA, July 15, 1879. Pig Iron.-The demand during the week has been very active, and lots desirable in point of price or quality have been taken as soon as offered. Buyers are unwilling to place their orders at an advance, but as higher prices seem to be only a question of time there is an unusually active inquiry, time there is an unusually active inquiry, based probably on the hope of duplicating previous transactions. This, we believe, has not been done to any extent. Furnaces are well sold up, and holders are quite indifferent about business unless prices are entirely in their favor. The tone of the market may therefore be considered strong, and if there is no reaction this month there is little doubt that a material advance will be made during the fall months. The feeling at present indicates great strength, although it should not dicates great strength, atthough it should not be overlooked that production has been largely increased, while prices have reached a point at which foreign Iron may soon be made to compute closely with the domestic article. The strong elements appear to be article. The strong elements appear to be light stocks, large and increasing consumption, scarcity and relatively high prices for Old Rails, Scrap, &c. The more general employment and demand for labor is also seen in the higher prices for Coal, Ore and other material, so that the cost of production will probably show a slight but steady tion will probably show a slight but steady increase. The condition of the English market, however, will prevent too rapid an advance, and give what is perhaps of far more value to the country at large—a large volume of business and a fair margin of profit, without great risks to either producer or consumer. We make no change in quotations, although the market is firmer than it was a week ago, and the average of all transactions would no doubt show higher figures. Transactions, however, have been made at a wide range of prices, according to circumstances, but the teadency is toward outside rates, which seem likely to become regular at an early date. We quote: No. 1 Foundry, \$19.00 @ \$19.50; No. 2, \$17.50; Gray Forge, \$16.75 @ \$17.50; Mottled and White, \$15 @ \$15.50.

Muck Bar.—The demand has been very tion will probably show a slight but steady increase. The condition of the English

The market during the past week has presented very few features of interest. The dullness of this season of the year in the Coal trade is proverbial, and although the mines and railroads are turning out their full quotas, the trade is, nevertheless, extremely dull. Apparently there has been less going on the last week than in the week previous. Exerciped is how, how, Muck Bar .- The demand has been very active, and stocks are pretty well cleaned up. Sales have been made at \$31.50 @ \$32 less going on the last week than in the week previous. Everybody is busy, how-ever, but for the most part on old orders. Prices are, for the present, unchanged, but there is a weaker feeling beginning to be shown. It becomes more difficult to obtain

der,
Antimony, csks., 67
Old copper, box, x
Tinfoil, cs., 25
Tin, ingots, 602
Tin plates, bxs., 500
Tin and terne plates,

bx8., 509

Brown W.
Bales, 129
Woodford W. O.
Steel, bdls., 80

COAL

The market during the past week has pre

Broke 1, \$3; Stove, \$2.90. D. & H. quote Lump, Steam and Grate, \$2.55; Egg, \$2.60.

The Philadelphia and Reading's circular

0K ..\$3.25 .\$2.90 \$2.90 \$2.90 \$2.65 ... 2.55 2.55 2.60 2.90 2.65

2.55 2.60 3.00

for competing points remains unchanged. It

is as follows

Lehigh.....\$3 Wilkesbarre... 2 Plymouth Red

Steel.

at mill, with higher prices now demanded; probably \$32 @ \$32.50 would be a fair quotation for good Bars. shown. It becomes more difficult to obtain the current rates, and although we do not hear of any sales below the usual figures, it is decidedly harder to make sales without concessions. Taken as a whole, the market is in about its usual condition at this time in the year, if we except the fact of an enormous output, which is, to a very considerable extent, being absorbed by the past orders of the companies. Freights are Blooms-Are in fair demand, but prices

orders of the companies. Freights are Structural Iron.-The market is firmer. orders of the companies. Freights are decidedly off. Boston is quoted at \$1, and Providence at from 90¢ to 95¢; New Haven, 60¢. Our quotations for Coal are unchanged and still nominal. Old Companies' Lehigh: Lump, \$3.40; Egg and Brokes, \$3; Stove, \$2.90. D. & H. quote: prospects in regard to the future are of the most satisfactory character. Prices are not what might be expected, however, in view of the advance in material and certainty of a heavy demand in the near future. Still, of a neavy demand in the near future. Still, the tendency is toward higher figures, and in ordinary transactions some advance has to be paid. We quote: Angles, 2.2¢ @ 2.4¢; Tees, 2.5¢ @ 2.6¢. Beams and Channels, 2.5¢ @ 2.7¢, according to specification.

Plate and Tank Iron.-There is some difference of opinion in regard to this branch of the Iron trade. Some claim to have advanced their prices, while others intimate the prices, while others intimate the prices, while others intimate the prices of the Iron trade. Three important meetings were held durated to the prices of the Iron trade. The Pennsylvania Coal Company quote for that orders are taken at former quotations. There is certainly no scarcity of business, and if prompt deliveries could be made, sell-Lump, Steam and Grate \$2.25; Egg, \$2.30; Stove, \$2.55. These prices are f. o. b. at Newburgh, with 50 cents per ton additional in New York. Lehigh and Wilkesbarre at Port Johnston make the following prices: ers might easily obtain satisfactory prices. Most of the mills are full of work, but there is a good deal of competition, in the face of which it is difficult to secure any general advance. The outlook for business in Plates Lump. Broken. Egg. Stove. Ch'tnut. is quite encouraging. Inquiries are numerous, and there is no doubt there will be a heavy demand during the last half of the According to the Miners' Journal, the output for the present year figures up some 5,000,000 tons in advance of 1878. These s.75 heavy demand during the last half of the he outb some
These the market. We quote prices firm, with the market. We quote prices firm, with the author of the heavy set of the set of figures, although not perhaps perfectly ac curate, are so relatively, and give a very fair idea of the state of the Coal tonnage fair idea of the state of the Coal tonnage from year to year. The total tonnage for the present year is put as high as 12,000,000 tons. Mr. Saward's figures for an even date are not at hand, but his tables show that all Plates, 2.2¢ @ 2.3; 1 and 1701, 2.3; @ 2.7; C. No. 1, 2.4¢ @ 2.6¢; Shell Iron, 2.75¢ @ 2.9¢; Flange Iron, 3.9¢ @ 4¢; Solid Firebox and Best Bloom, 5.5¢ @ 6¢.

probably without precedent, and there are no indications that consumers' requirements have been satisfied. The prospects of a have been satisfied. The prospects of a heavy fall trade is in every respect satisfactory, and a general advance in prices is believed to be only a question of time. We quote: Con.mon Sheet, No. 20 to 23, 3.2\psi @ 3.3\psi; No. 24 to 2\psi, 3.4\psi @ 3.5\psi; Best Refined Sheet, No. 25 to 2\psi, 3.6\psi @ 3.7\psi; No. 16 to 2\psi, 3.4\psi @ 3.5\psi; Best Bloom Sheets, No. 25 to 2\psi; Rest Bloom Sheets, No. 25 to 2\psi; Rest Bloom Sheets, No. 26 to 2\psi = 2\psi \ No. 25 to 2\psi; Rest Bloom Sheets, No. 26 to 2\psi = 2\psi \ No. 25 to 2\psi \ No. 3.7¢; No. 16 to 24, 3.4¢ (@ 3.5¢; Best Bloom Sheets, No. 16 to 24, 5.5¢ (@ 5.7¢; No. 25 to 28, 5.8¢ (@ 6¢; Refined Plates or Blue An-nealed, 5.16 to 16, 2.6¢ (@ 2.7¢; Best Bloom, 5.16 to 16, 5.3¢ (@ 5.5¢; A Patent Plan-ished, 10½¢; B Patent Planished, 9½¢; Best Blooms Galvanized, 45 % discount; second quality, 55 %; extra discounts for large lots.

Bar Iron .- The demand is improving, and a very satisfactory amount of business is reported. Prices are firm, and it is almost impossible to place orders under 2¢, even for second-class brands. The Western mills appear to have a market for most of their products in their own section, and we hear very little of competition from outside sources. Consumption is increasing, and the chief source of complaint is in regard to The increase in cost of production prices. The increase in cost of production has been greater than the improvement in has been greater than the improvement in prices, so that Bar manufacturers are in no better position than they were in the beginning of the year. Should the demand continue, as seems almost certain an advance in prices must be obtained. Meantime, we quote market firm, and 2¢ about a minimum price.

Steel Rails.-The market, in its leading features, is unchanged, but the tone is strong and a considerable amount of busi-ness has been done at full prices. Sales to the extent of 10,000 to 12,000 tons are re the extent of 10,000 to 12,000 tons are reported at prices varying from \$44 to \$46, according to time of delivery and location of mill. Higher prices could be obtained for summer delivery, but the mills have their capacity engaged to a large extent, so that sales are chiefly for the distant future. We quote \$44 @ \$46, at mill, according to location and time of delivery.

Iron Rails,-The market remains firm, and sellers have been able to secure full prices in every transaction. A larger business would be done if Rails could be had, but the mills are well sold ahead, and are not in a position to accept orders to any extent for early delivery. Buyers are un-willing to contract for late deliveries, so that new business has been somewhat limited. The demand for delivery during the next three months is very urgent, and sales of foreign Rails to arrive, to the extent of 7000 tons, have been closed since date of our last report. The market may be quoted firm at \$38 @ \$40, according to delivery, with sales of 56's at intermediate figures.

Old Rails.-The market continues firm, and sales to the extent of nearly 10,000 tons have been effected during the week, chiefly at \$24.50. Buyers are still prepared to take large lots at that figure, but there are none offered for spot delivery. Twenty-five dollars is asked for lots to arrive—business, therefore, is in abeyance for the time being. Sales have been made at \$24.75 and \$25 for lots on the spot, but consumers are not dis-posed to anticipate their wants unless they obtain some concessions in price. Rails have now reached a figure at which no one cares to carry stock, and although the sources of supply appear to have been pretty well drained, and prices in the English market are slightly higher, there is an evident lack of confidence in regard to the future. The advance has been much greater in Old Rails than in any other article in the Iron trade, and consumers manifest a decided unwilling ness to follow the market any further. Con sum; tion has been unprecedently large, howsum; ton has been unprecedently large, now-ever, and if it continues, as seems likely, prices may be maintained. For the time being, as we said before, \$24.50 @ \$25 is paid for spot lots, but at these figures consumers are unwilling to buy for forward delivery.

Scrap Iron.-The market is firm and prices are tending upward. Wrought commands \$24@\$2, and Cast \$14 50@ \$15.50. Sales at outside figures, and very light offer-

Spikes—are active and firm at \$2.30 @ 2.35 for ordinary size. Mills are full of \$2.35 for ordinary size. Annual work, and prospects seem to indicate higher

Nails,-The demand is only moderate, and prices are somewhat irregular. Sales ge lots at \$2.15, but \$2. 25 is the ordinary quotation.

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, Prittsburgh, PA., July 15, 1879.

During the past week we have had copious ains, which, though detrimental to harvestng, have been of great advantage to corn, potatoes, &c.; and equally as important, there has been a partial resumption of navi-gation, with a reasonable prospect of sufficient water within the next few days to let out the coal fleet. General business continues remarkably good for this season of the year. Manufacturers generally are busy and values are hardening. The Iron busi-ness is in better shape now than it has been

Three important meetings were held during the past week—the White Lead Association, at Saratoga; National Window Glass Association, at Cleveland, and the Western Association, at Cleveland, and the Western Nail Association, in this city, the action of each of which will be found elsewhere. These meetings were well attended, and, so far as your correspondent can learn, every-

Pig Iron.-We have to report a continued fairly active and strong market, with more buyers than sellers, and but for the extreme views of holders, the volume of husiness the past week would have been much larger. Sellers, in anticipation of a further advance, are very firm in their views; some of them are loth to name a price, and rates that would have been wilthe large companies are making very considerable advances over their tonnages for frequent occurrence. The amount of busi-

this city, informs your correspondent that when the price of rails rises above \$24 his when the price of rails rises above \$24 his firm find it cheaper to fall back on Pig Iron, as they have done. To illustrate this a little further, we will mention the case of a rail mill, located considerably West of Pittsburgh, which had made some large contracts, expecting to get all the old rails required to fill the same, but in this was disappointed, and forced to buy 3500 tons of Pig Iron instead. No doubt, a number of Pig Iron instead. No doubt, a number of idle furnaces will be started up before long, but there is reason to believe that there will be a consumption fully sufficient to absorb the entire production for some time to come; hence the selling interest have considerable confidence in the immediate future. Bituminous Coal Smelted Irons may be quoted at \$19 @ \$21, 4 mos., for Foundry, and \$16 @ \$20.50, 4 mos., for White to Standard brands of all-ore Red-short Mill; ordinary grades of cinder mixtures selling at \$18.50@ \$19. Bessemer continues in good demand, \$19. Bessemer continues in good demand, and may be quoted firm at \$21.50, cash, @ \$22, 4 mos., for Standard brands. Coke Irons firm; native ores sold at \$16.50 @ Irons firm; native ores sold at \$16.50 @ \$17. cash, and \$17 @ \$17.50, 4 mos., for Forge, an advance of fully \$1 per ton within the past two weeks. The principal brand of Anthracite Forge sold in this market for some time past is now held at \$18, cash, an advance of \$2, as compared with the price here a few weeks ago, at \$16, cash; very little doing in Charcoal Iron of any kind.

Manufactured Iron. - The buoyancy noted in our report of last week still con-tinues; orders are much more abundant than usual at this particular time, and con-tracts cannot be made for future delivery at prices now current. The lockout last month developed the fact very forcibly, that the cost of production could not be any further reduced, and as manufacturers had no other alternative but to demand higher prices or go on losing money, as the rates ruling prior to that time did not cover cost, they put up to that time did not cover cost, they put up prices, and have had no difficulty in obtain-ing all the orders they could fill ever since at the advance. Merchant Bars, for pres-ent delivery, \$1.75 @ \$1.80, 60 days, usual discount of 2 % for cash. Sheet Iron, \$2.75 @ \$2.80 for No. 24.

Nails.—The movement is light, although all that can be expected at this season, and, as in the case of Iron, manufacturers are as in the case of 1ron, manufacturers are refusing to book orders for forward delivery at current rates. We continue to quote at \$2.10 @ \$2.15, in a jobbing way, to days, 2 % off for cash.

Horse and Mule Shoes-Are still quoted in 100-keg lots, at \$3.25 @ \$4.25. Bessemer is rather quiet just now, but there is usually an increased demand in August.

Railroad Spikes .- The mills have all they can do, and the price is firm, but unchanged, at $2\frac{1}{3}\frac{d}{2}$, 30 days. There is a continued brisk demand for all kinds of railroad

Rails.—Steel Rails continue very firm at the recent advance, and the mills here have orders booked sufficient to absorb their production during the remainder of the year.
Prices still quoted at \$44 @ \$45, cash, for heavy and light sections, delivered free on cars in Pittsburgh. Old Iron Rails continue scarce and firm. So far as we can learn. scarce and firm. So far as we can learn, there have been no sales in this market above \$24, but they cannot now be laid down here at this figure. It is stated, however, that Pig Iron is now cheaper than Old Rails, and if this is true, the demand for the latter will fall off, while that for the former will be correspondingly increased. The largely increased demand for Old Rails is caused by the fact that they are being recolled by rail. the fact that they are being rerolled by rail mills, and some of the latter made large contracts with the expectation of using Old Rails, but, owing to the scarcity of the latter, have been obliged to substitute Pig Iron.

Wrought Iron Pipe.—There is an active demand for Gas and Steam Pipe, and prices demand for Gas and Steam Pipe, and prices are firm, but unchanged, 65% discount for large lots and 62½% in a jobbing way. Boiler Tubes steady at 47½ @ 50% off. Oil Well Tubing and Casing continues quiet and unchanged; there is very little inducement to put down new oil wells in the present condition of the oil market, as but a small percentage of the producing walls are present. centage of the producing wells are paying

Steel.-There are no new or importan features to notice in connection with this interest : business continues brisk, the mills continue to have all they can do, and prices are firm but und

Scrap.—There is a fair movement and a firmer feeling, in sympathy with Pig Iron, but prices remain about as last quoted: Old Wheels, \$19 @ \$20, gross; Machinery al, \$14 @ \$15; Cast Borings, \$10 @ Metal, \$14 @ \$15; Cast Borings, \$10 @ \$11; No. 1 Wrought Scrap, \$22 @ \$23, net; Boiler Scrap, \$22 @ \$22.50; Car Springs, \$29 @ \$30; Car Axles, \$27 @ \$28.

Window Glass.—The meeting of the National Association of Window Glass Manufacturers took place at Cleveland, Ohio, last Wednesday, and it was largely attended. The most important business trans acted was the reduction in discounts to 75 % straight for car-load lots, and 70 and 10 in a jobbing way; it was also agreed to operate the factories nine months during the year ending June 30, 1880, one month less than the year ending last June. This was done no doubt for the purpose of keeping down production, as it is much easier to sustain prices when there is no accumulation o stock. The situation, so far as the West i concerned, is better than it has been for number of years. Stocks are light; the consumption is increasing, and prices are decidedly better.

White Lead,-At a meeting of the White Lead Manufacturers, at Saratoga, on the 9th inst., the price of White Lead was advanced half a cent per lb., making the price here 71/2¢ per lb. in ton lots. Business is rather quiet just now, as it usually is in July, but an improvement next month is cted, and the indications are considered favorable for a good fall trade.

Coke.—The demand is on the increase,

one of the largest rail-consuming mills in present production is estimated at 30,000 tons W week, but the demand is fully to the supply. Prices steady at \$1.20 @ \$1.30 \$1 ton, delivered free on board cars at

> Coal.-It was thought Saturday that there Coal.—It was thought Saturday that there would be water enough within the two days following to let a portion of the Coal fleet out, as there were heavy rains on Thursday and Friday; but the expectations entertained were only partially fulfilled. The water in the river, after having attained a hight of 4 feet 10 inches on Sunday, compressed to recode and hight or 4 feet 10 incress on Sunday, com-menced to recede, and, as a consequence, only a few boats got off with light tows, ag-gregating about 600,000 bushels, whereas there are about 16,000,000 bushels here loaded, ready to move just as soon as there is water. Owing to the continued suspension of navigation and meager supplies in the down-river markets, in consequence of which prices have advanced materially, unlarge shipments are being made by rail, and may be quoted at 4¢ \$\mathbb{P}\$ bushel for Lump, delivered free on board cars in Pittsburgh.

Petroleum.-There is an increasing business, but prices are no better and the pros-pects for an improvement in the near future are not very promising. While for the present the consumption is probably in excess of the production, it is not likely to continue so for more than a few months; and then the visible supply is simply enormous, estimated at 6,000,000 to 7,000,000 of barrels. Some well-informed operators predict that prices will be much higher next year.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts., CHATTANOOGA, July 14, 1879.

The Mississippi Valley is again rent by a yellow fever excitement, which, we all hope, and many well-informed and cool persons and many well-informed and cool persons believe, will prove little else besides excitement, and therefore of short duration and nominal in the damage inflicted on trade. So far the matter has been a mere flurry. The intense heat has seriously interfered with operations, but all irons, crude and manufactured, have nevertheless shown a stiffening tendency. Prices of Pig, Merchant Iron, Nails, &c., will be advanced in next week's report. The average maximum heat has been about 95 degrees during the week. The country seriously needs rain, corn especially being in a suffering condition.

Pig Iron.—The feeling among furnace—

Pig Iron.—The feeling among furnace men and dealers continues to improve men and dealers continues to improve. Stocks are moderate in volume, and with the present demand are not likely present demand are not likely to increase very much. We quote: Coke Irons—No. I Foundry, \$17.50 @ \$18.50; No. 2, \$16 @ \$17; Gray Forge, \$14 @ \$15; White and Mottled \$12 @ \$13. Hot-Blast Charcoal—No. I Foundry, extra, \$20 @ \$21; ditto, \$18 @ \$20; No. 2 Foundry, \$16 @ \$18; Gray Forge, \$16 @ \$18; White and Mottled, \$15. Cold Blast Charcoal—Car Wheel Metal, \$22.50 @ \$27.50; do. Extra Standard \$24 @ \$20.50. to increase \$27.50; do., Extra Standard, \$24 @ \$29.50 Forge, \$17 @ \$22.

Muck Bar, &c.—\$27 @ \$34; Old Rails, \$19 @ \$20; Wrought Scrap, \$20 @ \$21. Old rails and wrought scrap are very stiff at quotations, with advancing tendencies.

Ores.—Brown Hematite, 50 to 56%; per ton, \$1.75 @ \$2.25. Red Fossiliferous, 50 @ 56%; per ton, \$1.20 @ \$1.60. The above prices for ores delivered in Chattanooga on cars, or on the wharf from flat boats.

Nails.-The market is good, and, for the Natis.—The market is good, and, for the first time in many months, there is a decided tendency to advance. A slight advance will certainly be secured before the 1st of August. We continue to quote at \$2.25 rates, usual discount on job lots.

Manufactured Iron.-The demand for Bars continues good. Stocks are sold low. The mills are mostly running on large con-The mills are mostly running on large contracts, which prevents accumulations. A slight advance has been gained on most articles, and all will be advanced next week. We quote: Bars, 2¢; Railroad Spikes, 2½¢; Light Rail, 2½¢; Track Bolts, 3¢; Trestle Bolts, 4¢.

Coke.—We quote 11¢ @ 15¢ per bushel for washed foundry. Furnace, full supply at \$2 per ton, free on cars at Chattanooga or South Pittsburg.

South Pittsburg.

Coal .- There is no change in the market nor in prices. We quote run of mine, free on cars in Chattanooga, at \$1.25 @ \$1.75 \$1 ton. Lump, as per quality, rot @ 12\$ \$1

Pig Lead-4¢; Ingot Copper, 18¢ Iron Rails.-The mill here has all it can do for several months. Prices remain strong, \$30 \$\text{\$\text{\$\text{ton being an inside figure.}}}

Steel Rails.—We quote at \$47, at the mill, and the demand beyond the ability of the mill to supply.

ST. LOUIS.

St. Louis, Mo., July 14, 1870 Iron still remains active. Considerable sales are being made, and some of the furnaces are asking an advance of 25¢ and 50¢

a	CHARCOAL HOT BLAST.
0	Missouri
r	Hanging Rock
n	COKE AND COAL.
θ	Missouri None offering
n	Southern, No. 1 18.50 @ 19.
n	Ohio River, No. 1 19.00 @ 21.
f	Jackson County, No. 1
	Hocking Valley, No. 1 19.00 @ 20.
s	Anthricite 20.50 @ 21.0
ı.	No. 2 and Mill \$1 @ \$2 per ton less.
0	COLD BLAST.
8	Missouri 25.00 @ 30.0
	Southern 25.00 @ 30.0
	Ohio 30.00 @ 32.0
9	IRON ORE.
9	
- 1	Iron Mountain 5.50 @
-	Southwest 4-75 @
9	Ore for flx 6.30 @
8	OLO RAILS AND CAR WHEELS,
	Rails 20.50 @ 21.0
	Wheels 20,00 @

BOSTON.

JULY 12.-The general tone of the mar-C. No. 1, 2.4¢ @ 2.0¢; Shell Iron, 2.75¢ @ 10; Shell I

Hangin Virginia Shawne Hocking

Hanging Hanging Longdal S. P., No Ala. and Red-sho Cold-sho Old Rail

of July parently except doubt, b of last

> No. 1 Har No. 2 No. 1 Sou No. 2 No. 1 Ha No. 2 No. 1 Ha Coke... No. 2 Ha Coke No. 1 Sout No. 2

No. 1 Char No. 1 Ston and Neu No. 2 Ston and Neu No. 1 Misse White an Neutral

have dropped down to \$1.35 \$\mathbb{P}\$ ton this week. Stocks here in Boston are light, and small lots readily command \$21.50 @ \$23 \$\mathbb{P}\$ ton for No. 1 X, and \$20 @ \$21 for No. 2 X. Manufactured Iron.—We note a continued fair inquiry for Refined Iron, and rates are firmly held at \$41 @ \$42 for Refined, and \$38 for Comfined Iron, and rates are firmly held at \$41 (@ \$42 for Refined, and \$38 for Common, in large lots from the mills. Small store lots are firm and in fair demand at 1½¢ @ 2¢ \$\frac{1}{2}\$ b. The active inquiry for advanced prices of Old Rails imparts a sharp upward tendency to the Bar Iron which is made therefrom. Nails continue in good demand at \$2.25 \$\frac{1}{2}\$ keg upon a 1od. basis. Sheet Iron is quiet and steady at 2½¢ @ 3¢ for single Common, and 3¢ @ 3½¢ for double do.; 3½¢ @ 4¢ for Refined; 6½¢ @ 6½¢ for Galvanized, Nos. 14 to 20; 6½¢ @ 8½¢ for Galvanized, Nos. 14 to 20; 6½¢ for Russia, perfect, and ½¢ less for do. No. 1 stained. Plate iron is in good request at \$2.30 for Tank, \$2.50 for C. No. 1, \$2.75 for Shell, \$3.75 for Flange. These prices are from the mills. Small lots from the stores readily command an advance of 25¢ @ 50¢ above these figures. Steel is in fair demand at unchanged prices from the stores, and we continue to quote: American Tool Steel at 11½¢ @ 12½¢; English do. at 14¢ @ 15¢; American Spring Steel at 5¢ @ 6¢; English do. at 7¢ @ 8¢; Tire Steel at 3½¢ @ 4¢; Bessemer Machinery at 4¢ @ 5½¢, and Cast do. at 6¢. Copper.—Ingot continues dull, and there have been sales of large lots at 16½¢. New York advices report sales of 50,000 lb at 16¢. Small lots from the Boston stores command 16½¢ large lots at 16\(\lambda \)? New York advices report sales of 50,000 \(\text{b}\) at 16\(\phi\). Small lots from the Boston stores command 16\(\lambda \) \(\lambda \) (at 17\(\phi\). There is no change in manufactures, and we continue to quote New Sheathing at 22\(\phi\); Braziers at 24\(\phi\) (at 26\(\phi\), and Bolts at 24\(\phi\); Yellow Metal Sheathing sells at 14\(\phi\) (at 14\(\lambda \) 2\(\phi\) for American and 12\(\phi\) for English in bond. Lead is quiet and figure at \$\frac{1}{2} \cdot \phi\) for large lots at 14\(\phi\) (at 22\(\phi\) for large lots and 12\(\phi\) for large lots. and firm at \$4.12 @ \$4.25 for large lots of Pig, and \$4.37 /2 @ \$4.75 for small store and firm at \$4.12 @ \$4.25 for large lots of Pig, and \$4.37½ @ \$4.75 for small store lots. For manufacture we continue to quote; Lead Pipe, 5½¢; Tin-lined Pipe, 12¢; Bar Lead, 6¢; Sheet Lead, 6¢; Block-Tin Pipe, 30¢; all of these except Pig are subject to the usual trade, or 10 % discount. Antimony is still in light demand at 11¼¢ for large lots and 12¢ @ 13¢ for smaller parcels. Spelter is quiet and unchanged. Car-load lots are firm at \$4.70 @ \$4.75; and store lots at 5¢ @ 5¼¢. Sheet Zinc is quoted at 6½c @ 7¢, according to size of lots. Tin is quiet and unchanged, and we quote 15½¢ @ 15½¢ for Straits in large lots. For smaller lots we quote below: Straits, 16¢ @ 16½¢; Banca, 18½¢ @ 19¢; English L. & F., 15½¢ @ 16¢. We quote Plate Charcoal I. C., \$6.50 @ \$7; Coke, \$5.25 @ \$5.75, and Charcoal Terne, \$6 @ \$7.50.—Commercial Bulletin.

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of July 14, write as follows: It has been deemed cause for congratulation that this deemed cause for congratulation that this year the spring trade appeared to be continued without abatement during the summer, but lately matters have taken a still more encouraging turn, and July—one of the dullest months in the year—promises to exceed in tonnage considerably any month of this or last year. The demand is not confined to any particular grade, but is general and active, while offerings are light and sellers inclined to act very conservatively in meeting the desire of consumers to buy at present rates, either for immediate vatively in meeting the desire of consumers to buy at present rates, either for immediate or forward delivery. Still, there is a large volume of trade, which is particularly noticeable at this season. Over 6000 tons of Hanging Rock Charcoal Iron alone have changed hands during the week, at prices which have been considered the top of the market. The time when Old Rails can prove a depressing influence appears past prove a depressing influence appears past
—for the present, at least—as they are very scarce, and many mills are starting up anew their puddling furnaces, because a supply of Old Rails is no longer available. The following quotations show as nearly as possible the actual range of the market: HOT-BLAST FOUNDBY.

Hanging Rock C. C., No. 1	21.00 @ 22.00
". C. C., No. 8	10.50 @ 20.00
Hanging Rock Coke and S. C., No. z	18.00 @ 20.00
8. C., No. 2	16.00 @ 18.00
Virginia Coke, No. 1	19.00 @ 20.00
11 No. a	18.50 @ 19.00
Shawnee S. C., No. 1	20.00 @
" S. C., No. 2	17.00 @ 18.30
Hocking Valley S. C., No. 1	19.00 @ 20.00
Hocking Valley S. C., No. 1 S. C., No. 2	17.00 @ 17.50
FORGE TRONG.	
Hanging Rock, No. 1 C. C	18.50 @ 19.00
Hanging Rock, No 1 Coke	17.00 @ 17.50
Longdale, No. 1 Coke	18.00 @
S. P., No. 1, Coke	18.00 @ 19.00
Ala, and Tenn, No. 1 C. C	17.50 (2) 18.00
Red-short, No. 1 Coke	18.50 @ 19.50
Cold-short, No. 1	15.50 @ 16.00
Old Rails, primecash,	23.00 @ 24.00
CAR WHEEL AND MALLEABLE	E.
Hanging Rock C. B	28.00 @ 30.00
Cherokee C. B	
Southern and Western Brands	96 cours 98 co.

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date Mesers. Geo. H. Hull & Co., under date of July 13, write us as follows: Several large sales, with inquiries for some large orders, are reported this week. There is apparently no falling off in the demand, except for Foundry Irons—occasioned, no doubt, by the strike of seve molders. The aspect of the future in Pig Iron has a healthy look. We continue our quotations of last week. The usual time, 4 mos., is allowed on the following quotations: allowed on the following quotations:

POUNDRY IRONS.

No. z Hanging Rock, Charcoal\$21.00 @ 22.00

NO. 3		
No. z Southern, Charcoal		
No. 2	18.00 @	18.50
No. 1 Hanging Rock, Stonecoal and	-	
Coke	19.00 @	19.50
No. 2 Hanging Rock, Stonecoal and	-9 @	-0
No. 1 Southern, Stonecoal and Coke	18.00 @	
No. s " Southern, Stonecom and Coke	17.50 0	
"American Scotch"		
Silver Gray		
MILL IRONS.		
No. I Charcoal, Cold-short and Neut'l.	17.00 @	18.50
No. 1 Stonecoal and Coke, Cold-short		
and Neutral	16.50 🕖	17.00
No. 2 Stonecoal and Coke, Cold-short		,
and Neutral		
No. 1 Missouri and Indiana Red-short. White and Mottled, Cold-short and	30.00 @	21.00
Neutral	2000	·6 00
		10.00
CAR WHEEL AND MALLEABLE IR		
Handing Pook Cold-blagt	-8 an @	20.00

BALTIMORE.

Mr. W. N. WYEFH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of July 14: For the past week this market has ruled firm and buoyant in tone, and the trade is doing all that reasonably could be

expected for the season.			
Refined Bar Iron, 1 to 6 by 36 to 1 19 10	1.90	@	2 ¢
" 1 to 41/2 by 11/2 to 2 "	1.90	0	2 \$
" 34 to 2, Round			
and Square"	1.90	0	2 6
Hoon Iron vid wide and unward	336	0	23/40
Band Iron, from 11/4 to 4 in. wide "	236	0	236€
Horse-shoe Iron	3	0	336€
Norway Nail Rods "	434	@	534€
Black Diamond Cast Steel "	1356	0	13 ¢
Machinery Steel	7	6	8 €
Cast Spring Steel"	43/4	a	534 9
Homogeneous Steel Plate	8		51/4
Common Horse Nails	10		14 €
R. R. Spikes, 51/2 xg-16			
Perkins' Horse shoes, W keg of 100 lbs.		8	3.375
" Mule shoes			
		7	6
Putnam Horse Nails 10 10 18 19			230
Globe Horse Nails 19 th 18 to	20	97	220

Less list discount to the trade Messrs. R. C. HOFFMAN & Co., Iron and commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of July 14: The Iron market continues active, with demand for immediate delivery and prices very firm.

Virginia	41	•			9.6				27.00 (
Anthracite	No.				 				19.00 (0
6.6	No. :				 	 		 	18.00	(0)
4.6									17.00	
4.0									15.00	
Charcoal, (), B,	Blo	OI	ns	 		*		 49.00	@
64	Cut	Bill	let	8.	 	 			52.00 (@
Refined Blo	oms				 	 			45.00	0

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., June 30, 1879.

" HOPE DEFERRED," we are told, "maketh the heart sick," the truth of which being admitted, the exceed-ing sickness of a good many persons on this side the Atlantic may be imagined. We have been begging, praying, striving for several years past to effect some improve-ment in business, but at this moment we appear to be very little, if any, nearer the attainment of the desired consummation than we were three or four years back. If that were the whole truth, it would not, per-haps, be so much amiss, but it isn't. It is but the half of the apple, for we have been losing money during the whole of the inter-val, and have also had to make more strenuous efforts than at any previous time to maintain our trading connections. The weeding out of home competitors by the op-eration of the "survival of the fittest" dogma, has helped a few departments to a little more individual business, but in many cases this has merely meant the transfer of the fight from the home to a foreign arena. That is to say, American and foreign com-petition seems to be gradually extending its area and volume, so that there are very few branches of the hardware industries in which competition outside Great Britain is not more or less serious and hurtful to the pros-perity of home firms. The smaller houses verywhere must inevitably suffer most from this state of affairs, and it seems more probable than ever that the only remunerative businesses will be those carried on by large and highly concentrated establish-

THE AGRICULTURAL SHOW

pened this morning, after a rather warm iscussion as to the wisdom or otherwise of postponing its inauguration. The only rea-son for this proposal was that the getting in of such an enormous number of implements and heavy machinery during a week or ten days of almost continuous rain, had converted the greater part of the show ground into a most impassable swamp. The soil is London clay, a.soft, sticky, clinging, compound, which approximates very closely to very good mortar when thoroughly wet. very good mortar when thoroughly wet. The traction and other engines day after day cut this up; the rain "rained every day," not to mention the nightly downpours; horses floundered, stuck fast and had to be dug out; carts and other vehicles sunk axle deep and were wrecked; the laborers lost their boots and waded about bare from the knees downward; exhibitors went mad; the whole neighborhood was choked up with implements and machinery, which could not get nearer the entrances than a street or two away; a journey from one part of the yard to the other was made at about the rate of one mile per week. In short, chaos rained complete and supreme. Some of the leading firms declined to make deliveries of their machines, and instructed the railway companies to take them back to their (the makers') works. A deputation waited on the society and tried hard to get a postponement, but in vain, and the press attacked the mismanagement of those in charge. In the meantime thousands of old railway sleepers had been brought in from the country and laildown, corduroy fashion, along the main avenues. On the top of these broken up bricks, cinders and other "insolubles" were thrown by the hundred tons, and men were kept going night and day in doing their level best to make the opening on the day named a bare possibility. Had the rain continued all would certainly have been in vain, but by good luck fine weather "came in" on Friday and has since continued, so that I am told the ground is this morning moderately passable.

THE EXHIBITS in the machinery in motion, implements, and miscellaneous hardware sections number 11,878, which are arranged in 704 separate stands, some of which are of great extent atands, some or which are or great extent and fitted up in a very attractive way. The majority of the exhibitors are British, but there are a considerable number of Ameri-can exhibitors, in addition to which many of the English houses include your "notions," &c., in their lists of articles shown. A firm of agents located in Thames street shows the McCormick harvester and self-binder, Stoddart's "tiger" horserake, and Chadburn

& Coldwell Co.'s "excelsior" lawn mowers Edmondson & Co. show Aultman's new buckeye self-binder, mower, reaper and thresher; the A. S. Whiting Co., of Oshawa, Canada, show a collection of hay, A. Wood has his new reapers, harvesters, mowers and self-binders; the Johnstone Harvester Co. have selections of their special manufactures; Whiteside & Co., of Liverpool, show Osborne's harvester and self-binder reaper movements. self-binder, reaper, mower, as well as American scythes and snathes, made by the Auburn Mfg. Co.; J. G. Rollins & Co. have the Farmer's Friend drills, Hollings-worth hay rake, Collins & Co.'s plows, the Ingersoll hay press, the "Archmiedean" lawn mower, samples of Batcheller's forks, Douglas pumps, and a host of "notions;" Selig, Sonnenthal & Co. display revolving scrapers, tyre benders, mill picks, &c., of American make; Fairholme & Co., of London, show celluloid harness; McKenzie & Sons have American tools, Yale locks and Sons have American tools, Yale locks and notions; the Home Scale Co. have good stand; Lloyd, Lawrence & Co., of London, show "the Pennsylvania" lawn mower, forks, axes and domestic contrivances by various United States makers; Gordon & Gotch have a large and varied American collection; Orme & Co. show "tanite" articles; Messrs. Keyworth & Co., Liverpool, have "Adriance" reapers, &c. The American articles will certainly command attention. There are a number of command attention. There are a number of German, some Austrian, Belgian and French exhibitors, with a solitary representative of Spain. The sheaf-binders are numerous, and are likely to give rise to a sharp competition for the honors

A SHEFFIELD SAYING.

some years ago, used to run to the effect that if a man had money enough to buy a ton of steel and could get another ton on credit, he never need "look behind him." Nowadays, nous avons changé tout celà. Matters have changed very greatly, and it is difficult for anyone, even with money and excellent credit, to say what will go to his credit at the end of the year's trading. The 1871-3 period ruined the crucible steel industry, period ruined the crucible steel industry, in common with many of its allied pursuits, by causing an unreasoning and reckless rush of all sorts of persons into the trade. Many of these had little or no experience of the practical processes of steel conversion and crucible casting, and a still larger number had but the slightest capital upon which to found their hopes and expectations. Scores of these little dabblers possessed less than £1000 each, and I am afraid that many of them had less than half that amount. They have failed, but during the continuance of their four or five years' struggle for existence they have done very much to disorganize prices, and, consequently, to weaken the po sition of older and larger houses. During the same period the Bessemer steel trade has undergone an enormous development, not dergone an enormous development, not merely as regards the tonnage actually produced by the converters, but more especially exports to United States. 3,231 2,453 1,622 other countries. 179,948 166,489 144,541 in respect of the greater variety of uses to which it has been put. Almost every adaptation of the newer material has displaced the use of a corresponding quantity of crucible steel, and there is every likelihood of the al-tered state of affairs being continued and ex-tended. This being the case, the position of the crucible steel manufacturers is nece sarily rendered very precarious, and it is fully obvious that it will need a marked and early revival of business to extricate many of them from their present plight.

THE RAIL TRADE

is very largely responsible for this deprecia tion in cast steel. Owing to the heavy pro-duction of steel rails for some years past and at the present time, enormous quantities of scrap in the shape of crop-ends have been thrown into the market at prices which have been on a level never before known. These rail ends have been brought into Sheffield from Barrow-in-Furness, from South Wales, and from Lancashire, Cleveland and Scot-land, and have there either been rolled down for the use of the shovel, wire and other manufacturers, or have been sawed up and the "middles" disposed of for the purpose of being used up by the makers of table blades for common cutlery. In the last-named cases prices have ranged from £4. 10/ named cases prices nave ranged from £4. 10/ to £6, figures which are at least 50 and often 100 per cent lower than the prices quoted for even a very low quality of con-verted steel. I cannot, and do not pretend to defend the use of Bessemer in any case where a cutting edge has been involved, but the facts are as I have thus briefly and sim-ply stated them. It has been pointed out to by stated them. It has been pointed out to the cutlery manufacturers that their predi-lection for Bessemer material would, in the long run, do them infinite harm and dis-credit, but many of their number have dis-regarded the advice given, and have proba bly been compelled to continue that course nilly willy, in order to meet the exigencies of the times and to keep their heads above water. The best-known cutlery houses have not, I believe, used Bessemer at all, or if so, in exceedingly small quantities. Some have tried a compromise by making use of so-called cast steel in which a good deal of Bessemer scrap has been melted down, and others still have been doing something with a mixture which is the result of the introduction of the contribution of the duction of the revivifying carbon through the medium of a patented ingredient, which, it is claimed, effects that end satisfactorily

SCOTCH PIG IRON

is weaker, with warrants lower than for over 25 years past, and with less business in course of execution. In Connal's stores the course of execution. In Connal's stores the quantity is 275,222 tons, an increase of nearly 2000 tons in the week. Writing from Glasgow, June 27, James Watson & Co. said: "The Scotch Pig Iron market has been flat during this week. On Monday it opened at 41/3, cash, and has gradually receded to 40/8, cash, closing this afternoon rather firmer, with buyers 40/9, cash, sellers I penny higher. The shipments last week were 7278 tons, as compared with 6326 tons for the coresponding week of 1878."

THE QUARTERLY MEETINGS,

now drawing nigh, are not attracting much prospective interest, it being thought im-possible that the majority of the iron manu-facturers can afford to sell at lower prices than those current. Marked bars might come down 10/ a ton, but ordinary mer-chantable Iron is unlikely to be changed. THE METAL MARKETS

have been dull and quiet all round at trifle below last week's rates. Tin has the best position in the market for the moment. is utterly lifeless, and is apparently unlikely to recover, so long as your Wester production continues so wastefully great. take the following remarks from the monthly circular of Messrs. Sanders Brothers, London, dated June 23d:

COPPER. A steady demand has existed for all sorts of copper during the past month; the fluctuations have been small, Chili Bars receding to £55 and slowly advancing to prices quoted to-day, at which market closes firm. The charters for second half of May were 1900 tons, and for first half of June 1300, prices on the West coast being slightly below our limits at home. The total figures on 1st inst., were 56,468, against 52,271 on 1st ult., and are the largest on record. Australian copper has been in steady demand, especially for shipment to the East, and prices are firm at £62. 10/ Wallaroo and £62 Burra, inferior brands being little offered. Manufactured copper has been in good demand for Russia and the home trade, but the feature has been in Indian require-1900 tons, and for first half of June 1300. but the feature has been in Indian requirements, which have been on a scale not seen for some months past. Reports of a sale of about 5000 tons Lake copper for export at about 14¢ per lb, have been current here for

Iron, £4. 7/6 for heavy sections, compared with £5 same date last year. Steel, £4. 10/compared with £6. 5/ same date last year.

Month ended May 31. 1877. 1878. 1879. Tons. Tons. Tons. | Month ended May 31. | 1877. | 1878. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. | 1879. States have been in this market for several weeks, and prices hereabout admit of export at American quotations. Steel rails are in steady demand, but at no improvement

SPIEGELEISEN.

£4 for 20 # English f. o. b. tide water, with dull, dragging market. Ferro-manganese quiet and unchanged in price.

MANUFACTURED IRON.

in prices.

£ 5	8.	d.	A2 3	8.	d.
. 6	0		5	5	0
	16	-			
		0	7	0	0
	0	0	7	10	0
. 7	15	0	8	10	0
	7	Month	ended	Ma	V 31.
					1870
			Tons.		Tons.
tes.	. 1	.197	258	1	501
ries	41	.545	40,738		36,830
Fi	V6	mont	40,735	d M	30,83
	tes.	tes, i	Month 1877. Tons. tes. 1,197	Month ended 1877. 1878. Tons. Tons. tes, 1,197 258 ries 41,545 40,738	Month ended Ma 1877. 1878. Tons. Tons. tes. 1,197 258

The demand for manufactured iron from the Australian Colonies has slightly revived since our last, but there is still great lack of activity, and makers in a good many instances continue very bare of orders. Marked iron is maintained at the official quotation of £7. 10/ for bars and £9. 10/ for sheets, but unmarked iron is very inventor. the Australian Colonies has slightly revived

£47, compared with £49 same date last year. Quiet market; steady demand.

TIN.

Our quotations to-day are:

English	L. 6	¢	F	iz	ug	çc	ot	8								0	0	0.							0 .	0		65	
56	bar	16.	m	t)	D.		۶.		. 4		0	0.1	0 1				0	0 1	0.0	1 10	0	0		0.	0.1	0	0.1	00	
Cémplés																												66	
Australi	an.									0		0 1		0	0	٠		0.1				0	0	0.		0		66	

Very little change has occurred in the value of foreign tin, but English sorts have given way under light demand, and are now decidedly cheaper than foreign. The figures will be seen to show an increase in actual stocks and a decrease in gross totals, but they are so large that buyers only purchase they are so large that buyers only purchase for actual wants, and generally look for lower limits. The deliveries continue good, being over 1850 tons for the past month, taking Continental and home figures into account.

SPELTER

Ordinary Silesian, £14. 5/, compared with £15 same date last year. Demand continues very light, and there being some pressure to sell, prices have again given way seriously.

TIN PLATES. I C coke, ordinary brands.... 15/3 @ 17/0 @ 18/6 @ 19/0 @

bare of orders, prices are receding slowly. Business could be done in ordinary cokes at 15/, if not 14/9, though some makers ask 15/6, or even more. Prices for charcoals are also very irregular, no doubt a good deal owing to the increased use of "steel bars," and the consequent introduction of many new brands. Charcoal ternes quote: 14 x 20, 17/6; 28 x 20, 36/, for grade of Allaway, STP, &c.

Iron is again the turn in makers' favor, and tin, too, slightly.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels

PARIS, June 29, 1879.—Metals.—Business during the week has been moderately active; a better feeling is perceptible. Copper.—There has been a decline of 1.35 francs in Chill Bars and a rise of 1.50 in Beat Selected English. We quote Chill Bars, 14.52 @ 139; ingots and Slabs, 153.50; Beat Selected, 156.50, and Beat Corocoro of 155. Havre is nominal at 143.75 @ 147.55 francs for Chill Bars, Marsellles is quiet, with a decline of 3 francs in Copper Bolts. They quote small Refined Ingots, 160 francs; Sheet Copper, 175; Bolts, 183; Yellow Metal Sheathing, 170; Copper ditto, 185. Tin is weaker; there has been a giving way of 1 franc in Banca Tin; 2 francs in Billiton; 2.50; in Stratta, and 3.25 in Australian. We quote as follows: Banca, 170; Billion, 178; Straits, 177.50; Australia, 170.55, and English, 170. At Marsellles, English Tin has dropped 5 francs. They quote Banca, 180; Straits, 175; French and English, 180 francs the 100 kilos. Lead.—This metal continues neglected, and there is a fresh decline of 50%. We quote here the various sorts, 34 @ 34-50, and Manufactured, 40 francs. Havre is steady at 33.50 @ 36 francs for first funion soft Spanish. At Marsellles, Lead is quiet and inactive with a decline of 50% in argentiferous and 1 franc in shot. They quote Argentiferous and 2 francs in shot. They quote Argentiferous and 2 francs in shot. They quote Argentiferous and 3.50 @ 34; first fusion soft, 3.50 is second ditto, 32; Antimonious, 32; Sheet and Pipe, 37, and Shot, 38. Spelfer has relapsed into a quiet state with a decline of soft in a second subscribing to the enthanced pretensions of producers, but the firmness of the latter being unshaken, they have hear trying their beat to avoid subscribing to the enhanced pretensions of producers, but the firmness of the latter being unshaken, they have had to submit to them. Some makers in the Champagne are trying to create a syndicate

(Revue Universelle.)

since our last, but there is still great lack of activity, and makers in a good many instances continue very bare of orders. Marked iron is maintained at the official quotation of £7. 10/ for bars and £9. 10/ for sheets, but unmarked iron is very irregular in price, and is obtainable without difficulty, in not a few quarters, at £5. 10/ for bars. Some export orders for galvanized sheets have come into the market during the past few weeks, and makers are just a trifle firmer in their quotations. The shipping trade generally, however, is much below the average in extent, and Belgian competition is felt very keenly in the girder and sheet departments, it being only in the highest qualities of iron for special work that Staffordshire can lay claim to a monopoly now. The naval preparations of Chili and Peru have stimulated demand for those markets.

REGULUS OF ANTIMONY,
£47, compared with £49 same date last year.

Quiet market; steady demand.

(Borsenhalle.

(Borsenhalle.)

Hamburg, June 28, 1870.—Metals.—There is a marked tendency to get up syndicates among producers in this country, under the new system of duties and taxes inaugurated, the arrangements being fortified by heavy penalities and amounts deposited to secure their collection in cases of contravention. In other words, a stand is to be taken against exaggerated tendencies in the way of competition. These not being speculative syndicates we do not condemn them in principle, and it is to be hoped they may be productive of the good that is expected of them. Copper.—Dealings have been on but a moderate scale, out prices have suffered no quotable decline, although they are in favor of purchasers if anything. We quote as heretofore, while Berlin quotes 6; \$6 for Mansfield and 64, 50 \$6 for Australian. (Tin.—No change whatever can be reported from here; at Berlin they quote Banca 7; \$6 71, 50 marks the so kilos., and English 6; \$6 for 50. Lead.—The German markets are inactive, and we are unaitered here. Berlin quotes Tarnowitz, Hartz and Saxonian 14 \$6 14.25 marks the so kilos. Spetter.—Our markets are about as inanimate as they well can be. We have no change to advise from here, while Berlin quotes Silesian, nominally, 15 \$6 15.50 marks the 50 kilos. There are no quotations from Breslau, no business having been transacted to base any figure on.

HOLLAND.

(Kreglinger & Co.)

been a total absence of other unfavorable circum been a total absence of other unfavorable circum stances which usually affect mining operations. The import of Banca Tin during the first six months of the year has been 84,326 slabs, against 50,724 last year; the deliveries were 66,532, against 50,724 lie stock or hand is 90,212, against 5,673; the import of Billiton Tin has been 57,796, against 55,245; the deliveries were 47,759, against 44,634, and the stock is 63,649, against 51,122. There are affect 6800 piculs Banca Tin, against 8400 in 1876, and 21,000 piculs Billiton against 18,000. The government returns of the export of Tin from Holland for the month of April are as follows:

Holland for		April.		-Fo		nths
To T	ons.	1878. Tons.	1877. Tons.	1879. Tons.	1878. Tons.	1877. Tons.
Germany		522	318	1,005	1,908	1,084
England			47	182	23	453
Belgium	159	252	137	504	517	696
France	42	35	123	97	109	262
Hamburg	48	50	30	108	338	147
Unit'd States			0.0	20		55
Other c'tries	- 1	78	33	4	194	60
Total	580	848	688	1,920	2,203	2,387
		EAST.	TNDI	ES.		

(Dummler & Co.)

BATAVIA (Java), May 8, 1879.—Metals.—Owing to an improvement in the consumptive demand the general position of imports is somewhat better, but no advance in sympathy with home rates could yet be obtained. If the rice crops do not fall short of anticipations, and if supplies of all kinds of goods continue moderate, an improved state of things may be expected for the next season, but it is to be hoped that arrivals will not be such as effectually to prevent any decided rise in rates. Stocks of Swedish Iron Bars have been searly cleared, and the demand remains fair; all other Iron is quiet, especially of galvanued corrugated, of which a good deal is on the way, while local stocks remain large. There is nothing doing in Steel. Sales of Copper are trifling. There is no inquiry for Lead, In Sheet Zino some business is being done. Spelter is neglected. Iron nails are ill sustained; Cupper nails are inactive. Tim.—The next sale of Billiton Tin will come off June 9, and will comprise 12,000 piculs. Exchange on London, 11,974 gruiders per 2, six months' credit.

(Kautenberg, Schmidt & Co.)
Simgapone, May 13, 1879.—Tin.—The market has been quiet; early in the fortnight 65 tons were bought at \$31.07\% (3 \$27 per picul, the bulk of which was done at the lower rate; latterly 35 tons changed hands at \$30.75 (3 \$20.50 per picul. Coal.—Arrivals aggregate 4000 tons Cardiff, all come to consumers. The market is firm, with little on the way; Cardiff, \$10.12\%.

American Horse Nail Machinery in England.—The British Mercantile Gazette has the following: There can be no two opinions as to the influence American ingenity is effecting on many of the industries of the old country. The latest instance which has come to our notice is in connection with horse-nail making. We are informed that the Stirchley Company, near Dawley, having been newly formed, is now adding this branch to its other work. It has purchased machines of the type which is being worked by the Sheridan Horse Nail Company, of Cleveland, Ohio, and Henry Company, of Cleveland, Ohio, and Henry B. Sheridan, the patentee of the machinery, and the president of the Cleveland concern, is now at Dawley starting the machines, which at present are served by a States operative, who will train the Shropshire hands.

Overproduction in the Oil Regions.— A dispatch from Bradford, Pa., to the Philadelphia Public Ledger gives a gloomy picture of the state of the oil trade in that region. It is said that the tankage is about exhausted, and 7000 barrels of crude petreleum are poured on the ground daily for want of storage. At the urgent request of the pro-ducers the Standard Oil Co. has begun buy-ing oil for immediate shipment at five cents barrel below the regular prices in the

The venerable Peter Cooper has given the public his views on rapid transit, but has not thereby added to his reputation as an engineer, though nothing he is likely to do sngineer, though nothing he is likely to do or any during the remainder of his useful life is likely to be unfavorably criticised by a generous public, which loves him for his good heart and his wise benefactions. To obviate the annoyances attendant on the present system of elevated railroads, he advocates the adoption of a plan of which the present system of elevated railroads, he advocates the adoption of a plan of which the important feature is the use of an endless chain. After considering the advantages of this method of propelling the cars, he recommends a plan for the noiseless running of the cars over the rails. The constant pounding of the wheels in passing from one rail to another is to be avoided by the use of a chair which will give support to the wheel. The wheels themselves are to be made with a groove over the whole face, which is filled a groove over the whole face, which is filled with hard gutta percha. "An elevated railroad so constructed," Mr. Cooper says, "with the propelling power under ground, and the rails so arranged as to take up the momentum in stopping and hold it ready to be given out in starting, with the wheels of the cars covered with gutta percha working on a gutta percha covering, and the rail held im a firm grasp in an india rubber chair, so that it would not touch tron in any of its that it would not touch iron in any of its parts, would have nothing to convey sound except the mere rubbing of the flange against the side of the rail. This rubbing could be avoided mainly by the shape of the flange.

The Wabash and the St. Louis, Kansas

City and Northern railroads are to be united under the name of the Wabash, St. Louis and Pacific Railroad. The largest share-holders of both companies have given their consent to the consolidation. The union of the two companies, which lacks only the formal ratification by their stockholders, has been virtually accomplished. The capital stock of the new corporation has been fixed at \$40,000,000, the sum of the combined stocks of the two companies. Of this capistocks of the two companies. Of this capital one-half will be preferred and the other half common stock. The present capital of the St. Louis, Kansas City and Northern road is \$24,000,000, divided equally into preferred and common stock. That of the Wabash is \$16,000,000 of common stock. There will be no change, therefore, in the stock of the St. Louis road, but the capital of the Wabash road will be divided equally into preferred and common stock. The funded debts of the two companies will remain for the present unchanged. It is probable that on the completion of the proosed extensions on the part of the Wabash Chicago and Detroit, and on that of the St. Louis road to Omaha, the sectional mortgages will be consolidated and secured on the entire line of road. The bonded debt of the entire line of road. The bonded debt of the new company will be then at the rate of about \$22,000 a mile. With the present mileage the funded debts of the two companies amount to about \$25,000 a mile.

INDUSTRIAL ITEMS.

MASSACHUSETTS.

The petition to place the Lenox Iron Com-pany in insolvency has been dismissed, set-tlement with the creditors having been made, and the title goes to the Smith Paper Company.

NEW YORK.

The Troy Standard says: Work will be The Troy Standard says: Work will be resumed in Filley's foundry, Green Island, August 1. The foundry of G. H. Phillips & Co. has just shut down for five or six weeks. The reconstructions at the Clinton foundry have been completed. Work has been resumed with a full force of men.

The capacity of the Elmira Rolling Mills is to be doubled, and the company are to engage in the manufacture of bridges.

to be doubled, and the company are ongage in the manufacture of bridges.

The Wood Mowing and Reaping Machine Company, of Hoosick Falls, manufactured 2715 machines during the month of June.

Witherbees, Sherman & Co. are construct-

ing hoisting apparatus preparatory to sink-ing a new shaft at their mines at Mineville. The Carthage Furnace was to resume operations on Thursday last, the 10th inst.

PENNSYLVANIA. The Greenville Iron Company are getting ready to manufacture iron cotton ties. They propose making 1000 tons as an experiment and if they can do so profitably, they will accept a contract offered them by a Southern firm for 5000 tons. Hamblin, Sons & Co., of this place, are making the necessary changes in the mill.—Argus.

changes in the mill.—Argus.

Miller & Co., of Reading, have received the contract for furnishing water pipe for Lancaster City from now until next April, at the following prices: 4-inch pipe, not delivered, \$21.40; 6, 8, 10 and 12-inch, delivered, \$21 per ton; 4-inch, delivered at Lancaster, \$22.76; 6, 8, 10 and 12-inch, delivered, \$22.46; for special casting, 1, 9 and

The Mount Carbon Rolling Mill, at Potts ville, which originally cost the owners \$250,000, and which was recently destroyed by fire, was sold at auction on Wednesday afternoon by the company which operated it. The machinery and scrap were bought by Lippincott & Co., of Philadelphia, for

\$5475, and the real estate by Vanwickie & Stout, of New York, for \$1000.

The Board of Managers of the new company growing out of the reorganization of the old Lehigh Valley Iron Company, have completed their organization. The name of the new company is the Coplay Iron Com-pany, Limited. E. P. Wilbur was chosen president, William H. Ainey, secretary and treasurer, and V. W. Weaver, superintend-ent. It is proposed to begin work as soon as the necessary preparations can be comas the necessary preparations can be com-pleted; and, as the company starts out with no debts except those owing to the mem-bers, the career of the new company must be

successful. All the iron works in Reading are very busy and working to their full capacity. The outlook is of the most cheerful charac-ter. The Reading Iron Company is working steadily, and there are large orders ahead of the most encouraging character. The in-dustrial outlook among the furnace men is custral outlook among the furnace men is very cheering, and there are indications that prices for pig iron will stiffen in the near future. The 10-hour working time still exists in all the P. & R. departments, and coal shipments are on the increase. The coal strike in the Shamokin regions does not waterially affect the Pacifics Corn. does not materially affect the Reading Com-pany's output. All manufacturing indus-tries are in fair operation, and the freight department of the Reading Company is run-

ring fairly full.—Reading Eagle.
The Pine Iron Works are now running regularly, and to their full capacity, for the

regularly, and to their full capacity, for the first time since the panic of 1873.

The Ormsby Furnace, Sharpsville, after undergoing repairs for the past two months, was put into blast on Saturday evening, and everything appears to be working in good order. The company operating it is styled to Perkins Iron Company, Limited, with S. Perkins, Jr., of Sharon, as manager. This makes four furnaces now in blast at Sharpsville, and three of the remaining five are being fitted up preparatory to blowing in.

of an early start. The mills in operation in New Castle are the Etna (Kimberly, Carnes & Co.) and the sheet mill (Bradley, Reis & Co.) As a total we have at the close of the first half of 1879, 11 blast furnaces in and 19 out in the Shenango Valley—36% per cent. on a unit of 30. Of the furnaces, No. 2, at Wheatland, would be abandoned, and the "Pet," at New Castle, might be put in the same list, because both stacks are too small to be taken into account these days. Of rolling mills we have a total of six in op eration and three out-that is, 66 per cent on a unit of 9—running 109 boiling and 29 heating furnaces, working double turn. The Perkins Furnace, in Sharpsville, was blown in Saturday, June 28. The stack is 12 feet in diameter of boshes, open top and closed front. It is the intention to make a speci alty of Bessemer pig iron.

PITTSBURGH AND VICINITY.

The piston of one of the Lowry engines the at the new water works came out of the piston head last week, and the engines were consequently stopped for a day or two. Mechanical Engineer Lowry says shrinkage cracks were discovered in the piston head.
J. B. Young & Co. are so busy that they

have taken on a number of new molders. and are running day and night. They re-port new orders are coming in by every mail, and that they will have to work double turn for some time yet.

The largest chill roll ever cast in this

The largest chill roll ever cast in this country, if not in the world, was cast last week at the foundry of A. Garrison & Co. Its dimensions are as follows: Diameter of body, 31 inches; length of body, 112 inches; shipments by lake, from Lake Superior, for diameter of journals, 20 inches; diameter of couplings, 13 inches; total length, 12 feet of season of 1879, up to and including the claims, is due to the fact that a portion of the phosphate of iron of the claims, is due to the fact that a portion of the phosphate of iron oxide gas which is generated in the molten metal as soon as the spiegel is added. It is possible, he says, that the phosphide of iron oxidizes, forms a phosphate of iron, which

I inch. Sixteen tons of metal were re quired to pour it. On examination the roll was found to be perfect in every respect. Another roll of the same dimensions will be cast shortly, and also a roll 20 inches in diameter to run between the large pair, the stand being for a Lauth 3-high. They are intended to be used for rolling homogeneous

steel plate.

H. K. Porter's locomotive works, Law-renceville, have been very busy of late.

Graff, Bennett & Co,'s iron mill, at Mill-vale borough, is running in every department, employing a force of about 550 men.
The special work of the mill is pipe iron.
The Crescent Steel Works have the usual

amount of work on hand, which keeps their full force of workmen employed.

James Thorn & Co. had a contract for

building an iron boat for an English company that has a line of boats on the Magdalena River, U.S. Colombia; but the war now in progress in that country has so disarranged affairs that the contract is "off"—at least for the present. Nevertheless, there is a for the present. Nevertheless, there is a prospect that there will be some iron boat building done here this summer.

building done here this summer.

The work of erecting the new glass factory for Atterbury & Bro., near the Pan Hand'e Railroad bridge, on the South Side, will be commenced at once. The new works are to be completed by January I, 1880, at which time the 20-year lease of the present site expires. site expires.

WEST VIRGINIA.

The Moundsville Mill is closed for repairs The Riverside was to resume Tuesday, and run until the 1st of August. It is stated they will soon stop using old rails, and manufacture nails from muck iron en-

At this time a great deal of interest is centered in the Belmont Mill. We cannot publish all we know without violating confidence, but the public may rest assured that the outlook is very favorable. Plans for the successful and continued working of the mill are being matured, with which uninterested parties will not be allowed to interfere, and at the proper time, which will be at no dis-tant day, the Belmont will start on a new as well as a more substantial basis than has been her lot in all her previous history .-Wheeling News Letter.

OHIO

Taylor & Boggis, Cleveland, received on the 14th inst., from Zurich, Switzerland, an order for 10,500 pounds of light castings. This order was secured in competition with foreign bidders, and perhaps with bidders from this country, although we do not know of any other bids sent from the United States. The price is fairly remunerative. States. The price is fairly remunerative, and the securing of the order quite a little victory for an American house.

The Ogden blast furnace and lands, in the Hocking Valley, were sold at assignee's sale last week to John R. Buchtel, Akron, and Col. W. D. Hamilton & Brother, of Chicago, for \$25,000. The furnace was erected two years ago and cost, with lands attached, \$100,000. The furnace was blown out six \$100,000 months after completion, and has been lying idle ever since. It is stated that the new company will start the furnace in a few

The roof of the stock house of the Himrod

The roof of the stock house of the Himrod Furnace Company, at Youngstown, fell in on the morning of the 11th. Loss, \$6000. Five men were injured.

The Brown, Bonnell & Co. trouble has broken out again. Directors are to be elected on the 17th inst., and it has been discovered that 500 shares of stock have been transferred on the books from the name of Richard Brown to that of James L. Botsford. If these shares are voted by Mr. Botsford, or if they are not voted by any one, the Bonnell party will be able to elect a board. Hence the excitement.

A patent has recently been granted a glassblower of Steubenville for improvements in glass molds. The improvement consists of the combination, with a mold for making articles of glass of one or more ad-

consists of the combination, with a mold for making articles of glass of one or more ad-justable cutters, which operate to mark or score the glass article being formed in the mold at the precise line of separation re-quired for the final operation of severing the article from the blow-iron, thus making the articles of uniform size, besides effecting a great saving of labor.

There is no truth in the report that the Philadelphia and Reading Coal and Iron Co. were about to lease the iron works of Shoener & Allen, at Tamaqua.

"Tubal Cain," in the Sharon Herald of the 11th inst., says: In Lawrence County, at New Castle, we have the result of the Coarte we have the county of the control of the

received a contract for roofing the United States government printing department building in Washington, D. C.
It is stated that the old rail mill, Youngs-

town, will be changed into a bar and guide

ILLINOIS.

A trust deed from the Joliet Iron and Steel Company to the Central Trust Com-pany of New York, has been filed for record in Wills County to secure its first-mortgage bonds, aggregating \$458,000 of \$100 each, bearing 7 per cent. interest and maturing in ten years from date. It is reported that these mills will soon resume the manufacture of railroad spikes, and will furnish em-ployment to a large number of hands. The Continental Bolt Works, of Chicago,

re having a brisk business.
The Chicago Nickel Works Company have just completed their new factory.

KENTUCKY.

The Cottage Furnace, at Mount Sterling, is preparing to go in blast.

The Big Sandy Railroad, in this State, is about to be completed to westward connections from Chesapeake and Ohio Railroad, at Huntington, Va. It will then run through Castigan, Lexington and Louisville, and will pass Bath and Carter furnaces and near others in Eastern Kentucky, and will put

new life in them.
The Princess Furnace, lands and imments will be sold at public outery on

The Iron Hills Furnace is now averaging 1134 tons of strictly No. 1 pig iron.

	MARQUETTE.		
ı	Mine. Gros	95	
١	McComber		2,60
	Manganese		
)	Rolling Mill	0	25
٠	Cleveland	0	33,92
ı	Lake Superior		4,43
	Humboldt	0	4,42
	Edwards		3.39
i	Republic	0	36,59
	Champion		24,83
	Marquette		20
	Total ore	I	20,20
	PIG IRON.		71-9
	Camp Fumage		2,175
	Carp Furnace		808
	Troncer Purmaco.		
	Total pig iron		2,986
			-,900
	QUARTE,		- 0
1	Carp River Iron Co	0	1,280
1	L'ANSE.		
1	Michigamme	- 1	10,710
1	Spurf		408
1			_
1	Total	1	11,127
1			0-
ĺ	Ore to local points	X	3,123
1		-	
I	Total ore, pig iron and quartz	I,	57,830
1	EBCANABA.		
1	Angeline, Specular		6,475
1	Angeline, Hematite		978
ł	Barnum		9,302
1	Bessemer		3,228
ı	Cambria		1,919
ł	Cheshire	1	6,003
i	Cleveland Hematite		3,834
I	Cleveland Hematite		5, 117
ı	Cyclops		7,407
ı	Edwards		303
ı	Emmett		4,265
l	GoodrichJackson		1,837
l	S. Jackson.		7,184
ŀ	McComber		2,819
ì	Michigamme		7.445
۱	Mitchell		3,317
l	National		0,116
ľ	New York		0,628
l	Norway		0,060
ı	Palmer	-	6,975
ľ	PalmerQuinnesec	1	6,975 7,856
П	Saginaw	I	3,574
п	Salishury	21	1,851
ı	Superior, HardSuperior, Hematite	H.	3,488
ľ	Superior, Hematite		289
ľ	Vulcan		4.743
	Winthrop		1,327
ľ	Section 12	1	1,925
ľ	Foster		044

The new owners of the Green Bay furnace are engaged in putting the kilns in re-pair, and propose to have the furnace ready to go into blast some time in August.

METALLURGICAL NOTES.

PHOSPHORUS IN COAL.

Mr. C. Henry Roney, C. E., has contributed to a recent number of the Journal of the Franklin Institute a short note, which he entitles, "A Comparison of the Percentages of Phosphorus in Bituminous and Anthracite Coals," He states that, in 1869, he made a series of analyses of Schuylkill anthracite, which satisfied him that most of the leading coals of that district contain scarcely a trace of phosphorus if carefully prepared, picked and screened free from slate, but that they might contain injurious amounts of phosphorus and sulphur when carelessly mined and prepared. He quotes Dr. McCreath's analyprepared. He quotes Dr. McCreath's analyses of bituminous coals and coke, and publishes a letter from Dr. C. M. Cresson, of Philadelphia, to Mr. W. E. C. Coxe, in which his view that the slates of anthracite coal are the chief source of the metalloid impurities, is substantiated. Dr. Cresson says: "By reference, I find that the an nouncement that the slates accompanying activacities frequently contain phosphorus. anthracites frequently contain phosphorus, as well as sulphur, was made at the meetings of the American Philosophical Society, held May 1st, 1874, and March 5th, 1875. The major part of the phosphorus is in the upper slate, and varying amounts have been got from the dividing and lower slates. I have found that the sulphur is generally distributed and located in a similar manner. A knowledge of these facts evables the selection of anthracite with a minimum both of sulphur and of phosphorus. In fact, the competition for trade has rendered such competition for trade has rendered such careful preparation necessary, and there are now mined and sent to market from Schuyl-kill County, coals practically free from both phosphorus and sulphur. I have recently made analyses of large samples taken from the cars as they were loaded for market, at the Boston Run and Hammond collieries of the Philadelphia and Reading Coal and Iron Company, and find that they do not contain Company, and find that they do not contain an appreciable amount of phosphorus and of sulphur, but o. 1233 per cent. and o. 0522 per cent., respectively. You will perceive, therefore, that the substitution of coke, either in whole or in part, as suggested for properly prepared coals, will not improve upon the quality of these coals in respect to the elements named."

DEPHOSPHORIZATION OF PIG IN THE BESSEMER CONVERTER.

M. Pourcel, the accomplished engineer of the Terre Noire Works, recently read before the Société de l'Industrie Minérale, at before the Société de l'Industrie Minérale, at St. Etienne, France, a paper on the allabsorbing topic of the metallurgical world, the manufacture of good steel from pig high in phosphorus by the Thomas & Gilchrist process. His theoretical developments differ considerably from those of other eminent authorities, and as he does not hesitate to draw from them important practical conclusions, his views will command attention. He asserts, first of all, that the dephosphorization of the metal cannot take place until the carbon is removed. Air must be blown the carbon is removed. Air must be blown the carbon is removed. All must be blown in after the disappearance of the carbon, so that much peroxide of iron is formed and dissolved. The reduction of the latter by the addition of spiegel may give rise to explosions. The dephosphorization commences only after carbonic oxide gas is no longer formed, as it cannot take place in a reducing atmosphere. This is sustained by the fact that no such action occurs in the blast furnace, even though the cinder be exceptionally basic. M. Pourcel states, also, that in England the steel produced by the new process runs higher in phosphorus after ten per cent. of spiegeleisen has been added, than before such addition. This, he claims, is due to the fact that a

may combine with the silicates of iron and lime. But under whatever condition the operation may be carried on, and however small the percentage of silica in the cinder may be, the phosphide of iron can only be carried into the slag under the influence of energetic oxidation, and only when carbon is reduced to its minimum. In consequence of this, M. Pourcel urges, a period of overblowing will always be characteristic of the method in question. It may be predicted that in the Siemens-Martin or Pernot furnaces, where such a strongly refining action by overblowing cannot be reached, the dephosphorization can never be practically attained, although the basic lining may be the tained, although the basic lining may be the same as that used in the Bessemer converter. M. Pourcel holds that phosphorus is elimin-ated in direct proportion with silicon so long as no carbonic oxide is formed, and the operas no carbonic exide is formed, and the operation is carried on under circumstances which prohibit the presence of free silica. The action of lime, he asserts, is only one of preservation, and dephosphorization can only be effected by a very energetic ox-

UTILIZATION OF PHOSPHORUS

Mr. Sidney G. Thomas, one of the invent-Mr. Sidney G. Thomas, one of the invent-ors of the famous dephosphorizing process, not content with having rendered phos-phorus—that dreaded impurity of iron and steel—harmless, has gone one step further and proposes the utilization of the phos-phorus which in his process is, as it were, concentrated in the slag. He roasts the cinder obtained in blowing pig with simultaneous additions of lime and oxide of iron, in a reverberatory furnace, in order to convert the protoxides of iron and manganese into insoluble peroxides. After calcination the slag is ground fine, and is treated with cold hydrochloric or sulphuric acid, diluted, or with a cold solution of sulphurous acid, which dissolves the phoemboric acid. With which dissolves the phosphoric acid. With the latter solvent the phosphate will be al-most at once precipitated on heating, while the sulphurous acid which is driven off may be recovered by condensation. The solution in hydrochloric or sulphuric acid may be completely evaporated, forming a concentrated product which, when the former acid has been used, contains chloride of lime. These or any other methods practiced for the manufacture of phosphates may be made use of. As few have an idea of the enormous quantities of phosphorus which are an-nually wasted in the manufacture of iron, it may be interesting to cite the fact that the phosphorus contained in the iron produced in the Cleveland district of England alone amounts to 30,000 tons. Although the re-covery of phosphorus is not a novel idea, it is possible that the concentration of phosphoric acid in the slag (7 to 15 per cent.) may render it practically attainable.

The Antwerp Exhibition.-We have The Antwerp Exhibition.—We have received a copy of a circular issued by Mr. Stanislas H. Haine, of Antwerp, Belgium, giving information concerning the approaching international industrial exhibition at that place. Mr. A. Kaufman, 32 to 36 Park Place, New York, is authorized to accept and forward goods from this country, in the absence of any United States Commissioners, and will forward and return them free of cost, assuming personal responsibility for their sale or safe return. Heavy machinery or large and bulky exhibits will not their sale or sale return. Heavy ma-chinery or large and bulky exhibits will not be accepted on these terms, but all kinds of small articles adapted to the Belgian and neighboring European markets are desired, and can be exhibited with advantage. Mr. Kauffman will take much pleasure in giving such information as those who contemplate becoming exhibitors may desire. It is necessary, however, that immediate action should be taken, as only a short time now remains for forwarding exhibits

A dispatch from Paris, under date of July A dispatch from Paris, under date of July 12, contains some rather surprising intelligence, to the effect that an important treaty, affecting the interests of New York, has just been signed in that city. In 1868 the New York Legislature passed an act incorporating the New York City Central Underground Railway. This charter was confirmed and amplified by another act of 1869. In 1870 the company located the line under the charter, and in 1873 the franchise was mortgaged. A foreclosure was entered in mortgaged. A foreclosure was entered in 1876, and the title under sale was perfected September, 1876, by Mr. Vandenberg, the purchaser. In December, 1877, an effort was made to interest Sir Edwin Watkins in the work, but without success. The scheme remained in abeyance until July, 1878, when the Banque Parisienne, of Paris, began to investigate the matter. "A final treaty for the supply of the necessary capital for the construction of the road was signed yesterday by the bank, subject to the stipulation that the company shall raise \$500,000 for first expenses and establish the validity of its franchise." This belongs to the class of news franchise." This belongs to the class of news which the country papers give their readers, under the cautious heading, "Important, if true." It may be true, for all we know to the contrary, but it is interesting all the

Affairs in the Cleveland district, England, are very far from promising. The protracted depression has brought nearly everybody down to the lowest point, and the continued bad trade, together with the effects of the bad trade, together with the coal trade, and the recent strikes in the coal trade, and the heavy failures, has placed many firms in such a position that the least financial disturbance may be followed by serious consequences. Every effort will be made to tide over the next few months, after which it is hoped that trade will improve. With re-gard to Messrs. Lloyd & Co.'s failure it is not expected that any attempt will be made to keep these works in operation. As to Hopkins, Gilkes & Co.'s concerns, the credi-tors are sanguine that they will get a hand-some dividend. The engine works of this company will not be allowed to stop, and it is hoped when the whole affairs of Hopkins, Gilkes & Co., Limited, are wound up a new company will be formed for the purpose of taking over the splendid site by the river side, and erecting steel works.

Edward Learned has received a grant from the Mexican government to assist in building a railroad 150 miles in length across the Tehauntepec Isthmus.

LAWN STOOL.





This Lawn Stool is made of second growth White Ash, the strongest and most beautiful of our native woods. The seat is heavy cotton sail duck. The frame is put together with bolts and screws, and without glue, so that rain does not injure it. It shuts up more compactly and weighs less than any other 4-post stool in market. While it is much the cheapest, it is equal to the best in use. Dealers in such goods in all places will get them to fill the demand. They weigh two pounds each.

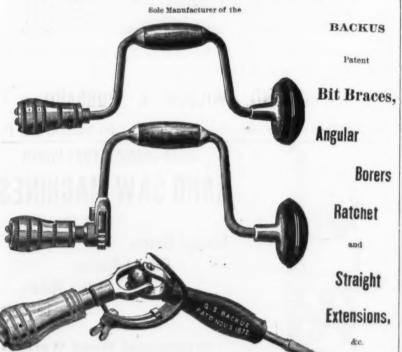
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4, 5 and 6 fingers.
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CRADLES,
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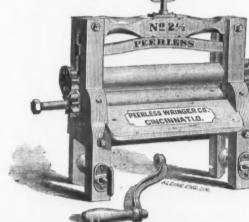
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Cold Rolled Shafting.

We have received the following:

To Whom it May Concern: In view of the circular dated the 5th inst., issued by Messrs. James B. Young & Co., of this city, we consider it due to those interested that we publish the following correspondence between James B. Young & Co. and ourselves, relating to said circular, and also the subjoined extract from the record of the suit in the State Court, showing the decision of the Common Pleas Judge touching our patent No. 7003 (reissue), to which we refer in our letter to Messrs. James B. Young & o. Jones & Laughlins. Pittsburgh, Pa., June 30, 1879.

PITTSBURGH, June 5, 1879.

Messrs. Jones & Laughlins.—GENTLEMEN:
We propose to issue a circular as follows:
To All Whom it May Concern: Notice is hereby given that in the Court of Common Pleas, No. 2, of Allegheny County, Pa., we brought an action against Messrs. Jones & Laughlins for the issuing of their circular dated August 1, 1877, wherein they assert that the use of "Seaman's Rolls" for the purposes therein named is an infringement of Jones & Laughlins' letters patent for cold rolling and polishing iron and steel; which circular we claimed, in said action, to be false and defamatory. Upon the trial of this action the jury found for us, and on this verdict the Court, on June 2, 1879, entered judgment against Jones & Laughlin tered judgment against Jones & Laughlin and in our favor.

The issue of this circular is deemed proper

to correct any misapprenension created by Jones & Laughlins' circular, and we trust that this judicial determination of the incorrectness of the latter, will satisfy the public that they can safely purchase and use the

Seaman's Rolls."

If you have any objections, would be pleased to have them nov Yours, truly, JAMES B. YOUNG & Co.

Messrs. Jas. B. Young & Co., Pittsburgh, Pa.—Dear Sirs: We are in receipt of your

Pu.—Dear Sirs: We are in receipt of your letter of the 5th inst., containing a copy of a circular which you propose to issue, and in which you say, "If you have any objections, would be pleased to have them now."

In our judgment your proposed circular is calculated to mislead. While you therein state that a verdict was rendered in your favor in the suit in the Court of Common Please of Allegham, County, Pa. von sup-Pleas of Allegheny County, Pa., you suppress the fact that that verdict was for the sum of six and one-fourth cents only. Furthermore, your proposed circular does not inform the public that the Judge who tried inform the public that the Judge who tried the case in the Common Pleas Court decided, (as our counsel advises us) that the use of Seaman's Rolls in the manner complained of by us does infringe one of our letters patent, viz.: Reissue No. 7003, dated March 21, 1876, for "Improvement in the manufacture of iron."

We have further to say to you, that the dispute between you and ourselves involves.

We have further to say to you, that the dispute between you and ourselves involves a question of the infringement of our two letters patent, Nos. 7003 and 7004 (reissues both dated March 21, 1876), for cold rolling and polishing iron and steel, and we are advised by our counsel that this question can only be judicially determined by the Courts of the United States, and you well know we have now a suit pending in the United States Circuit Court for the Northern District of Ohio, against the Akron Iron Company, for infringing our two letters patent by the use infringing our two letters patent by the use of "Seaman's Rolls."

In order properly to understand the state of the case, the public should be advised of all the facts above stated.

Very respectfully, yours,
Jones & Laughlins.

The Judge of the Common Pleas Court charged the jury in the case of James B. Young & Co. rs. Jones & Laughlins, in the words following:

"The defendants contend, however, that any rolling of iron or steel by which its hardness, strength or stiffness is increased, hardness, strength or stillness is increased, at a lower temperature, and after it had been rolled and finished in the usual way, prior to their original patent of August 23, 1859, is a violation of their rights under that patent and reissue 7003, although it may be finished while the metal retains considerable artificial heat. This strikes me as a fair in-terpretation of that patent, and I so instruct

And the Judge affirmed the following points submitted by the defendants (Jones & Laughlins), viz. :

5. That the defendants' reissued patent No. 7003, contemplates that cold rolling as described in and covered by that patent, may be carried on while the bars have such a degree of artificial heat as they retain ima degree of artificial near as they retain immediately after they have been rolled out and shaped in the common way as hot rolling was practiced prior to Lauth's invention. Affirmed.

That the range of temperature for cold relling iron and steel comprehended by the defendants' patented process extends from the degree of heat at which hot relling ceased, according to the common method practiced before Lauth's invention, down to an absolutely cold state, and the use of Sea-man's Rolls within that range of tempera-ture to impart to iron and steel the improved qualities contemplated and covered by the defendants' reissued patent No. 7003, would be an infringement thereof. Affirmed."

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The HUBBEL SCREW COMPANY, LIMITED, are now prepared to sell to consumers and manufacturers of fine thread Machine Screws, their celebrated MACHINES, with latest improve-

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Sashes are locked with a meeting rail lock, as with weights. These goods give satisfaction, For sale by the Hardware trade. Send orders, &c., to

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THE THOMPSON Apple Parer, Corer and Divider Combined.

Manufactured Exclusively by the

Noiseless Self-Coiling Revolving NEW ENGLAND BUTT CO., Providence, R. I. Patented August 14, 1877.



The attention of the Hardware trade is respectfully called to the many important advantages possessed by this machine, which make it the most practical and saleable Combined Parer and Divider in the market, such as durability, perfect work, low price, ease, convenience and great rapidity of operation, performing the entire work of paring, coring and dividing an apple into six parts and discharging the core from the fork by a single sweep of the lever. Is worked over a tub or box, and the cores separated from the prepared fruit as shown in cut. Nothing claimed for it that a trial will not readily demonstrate.

For machines or circulars address the manufacturers, or

. G. R. THOMPSON, Patentee, Quiffey, Ill.



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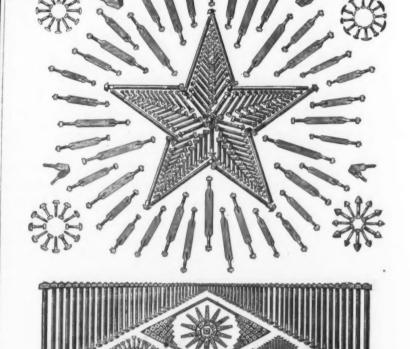
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every variety of style. Silver-Glass, Silver Center, Fine Cut, &c. Fitted with heavy silver-plated mountings. Extend from 1 to 3 inches. They can be adjusted to doors of any thickness without the annoyance of the old-fashioned washers and pins. Our "Patent Cham-ber" (Pat. Nov. 6, 1877) prevents all possibility of the



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Office Swift's Iron and Steel. Works, Cincipkati, March 7, 1870.

Messrs. Totten & Co., Pittsburgh, Pa.—Gertlemen: Having had two pairs of your Hollow Chilled Rolls in use during the last eighteen months in our plate train, we have no hesitation in expressing our satisfaction with them and with the character of the work they have performed.

We think the principle upon which they are made is the correct one, and find, after severe trial, that they carry a good surface for a considerably longer time than the ordinary chilled roll; are less liable to checks, and the expansion and contraction is much more uniform and gradual throughout the entire body of the roll, all of which tend to make the gauge of the plates more equal. Our roller, a very competent one, says they are the best rolls he has ever worked at, preferring them to any other make. Whenever we have occasion to order any more Chilled Rolls we shall be pleased to give you our order. Yours respectfully,

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Per Geo. CLYMAN, Vice-President.

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Blake's Patent Expired-End of Monopoly. The undersigned, sole owners of the old Loviathan, Gates' patent, and the Brown's patent Rock breakers, will guarantee our crushers to break two tons to one of Blake's (or any other.) Send for circulars. Also Stamp Mills and all kinds of Mining Machinery made on short notice.

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Alleyson Steam Funny Works, 14 and 16 Water st., Brookbrn, 11 N. 1872. Alles Alarm Till Mc. Co. Providence, R. I
Alleyson Steam Funny Works, 14 and 16 Water st., Brookbrn, 11 N. 1872. Alles Alarm Till Mc. Co. Providence, R. I
A printing Co. Philadelphia. Berever Pauls, Philadelphia. Berever Bills, Philadelphia. A rehitectural Irven Work. Bohitectural Work. Bohitectural Work. Bohitectural Work. Bohitectural Work. Bohite Media. Bellows. Menanforchurers of. Sooti Urs. Bohite Media. Berin Roso. Berin Roso. Mic. Co., Sachand, Chicago, Ill. Berin Roso. Mic. Co., Sachampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 45 Berin Roso. Miller and Rose of. Indeman O. & Co., 34 Pearl. A y. Bill Brances. Makers of. Makers
A printing Co. Philadelphia. Berever Pauls, Philadelphia. Berever Bills, Philadelphia. A rehitectural Irven Work. Bohitectural Work. Bohitectural Work. Bohitectural Work. Bohitectural Work. Bohite Media. Bellows. Menanforchurers of. Sooti Urs. Bohite Media. Berin Roso. Berin Roso. Mic. Co., Sachand, Chicago, Ill. Berin Roso. Mic. Co., Sachampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 44 Belling. Makers of. A steamber Mic. A seathampton, Conn. 45 Berin Roso. Miller and Rose of. Indeman O. & Co., 34 Pearl. A y. Bill Brances. Makers of. Makers
Hotekheis inty C. Fleid & Co., 522 E. 14th, N. Y 19 Hotekheis inty C. Fleid & Co., 522 E. 14th, N. Y 18 sholton & Co. Auburn, N. Y 18 sholton & Co. Auburn, N. Y 18 sholton & Co. Auburn, N. Y 18 sholton & Co., Auburn, N. Y 18 sholton, M. Chicago, Ill 31 Bellaw, Menafocturers of, Scott Geo. M., Chicago, Ill 31 Bellaw, Menafocturers of, Scott Geo. M., Chicago, Ill 31 February & Co., Easthampton, Conn 34 Bellaws, Menafocturers of, Scott Geo. M. C. & Sons, Buffalo, N. Y 18 Index ander Box 21 N. 34, Philadelphia shinia 31 February & Co., Easthampton, Conn 34 Index ander Box 21 And 39 Pearl, N. Y 18 Index and C. & Sons, Buffalo, N. Y 18 Index and C. & Sons, Buffalo, N. Y 18 Index and C. & Sons, Buffalo, N. Y 18 Illies and Sco., 24 Chambers N. Y 18 Illies Auburn, M. H. & Bro., 18 Shinia & Co., 24 Chambers N. Y 18 Illies Auburn, M. H. & Bro., 18 Shinia & Co., 24 Chambers N. Y 18 Illies Auburn, M. H. & Bro., 18 Shinia & Sons, 18 Shinia & Co., 24 Chambers, N. Y 18 Bell futter Scorew.) Colonian Bostraw and Stachine Co., Cleveland, O 34 Bella futter Scorew.) Colonian Bostraw and Stachine Co., Cleveland, O 34 Bella futter, Moders of N. Y 18 Bell futter, Moders of N. Y 18 Bens Hights, Mo
Hotekheis inty C. Fleid & Co., 522 E. 14th, N. Y 19 Hotekheis inty C. Fleid & Co., 522 E. 14th, N. Y 18 sholton & Co. Auburn, N. Y 18 sholton & Co. Auburn, N. Y 18 sholton & Co. Auburn, N. Y 18 sholton & Co., Auburn, N. Y 18 sholton, M. Chicago, Ill 31 Bellaw, Menafocturers of, Scott Geo. M., Chicago, Ill 31 Bellaw, Menafocturers of, Scott Geo. M., Chicago, Ill 31 February & Co., Easthampton, Conn 34 Bellaws, Menafocturers of, Scott Geo. M. C. & Sons, Buffalo, N. Y 18 Index ander Box 21 N. 34, Philadelphia shinia 31 February & Co., Easthampton, Conn 34 Index ander Box 21 And 39 Pearl, N. Y 18 Index and C. & Sons, Buffalo, N. Y 18 Index and C. & Sons, Buffalo, N. Y 18 Index and C. & Sons, Buffalo, N. Y 18 Illies and Sco., 24 Chambers N. Y 18 Illies Auburn, M. H. & Bro., 18 Shinia & Co., 24 Chambers N. Y 18 Illies Auburn, M. H. & Bro., 18 Shinia & Co., 24 Chambers N. Y 18 Illies Auburn, M. H. & Bro., 18 Shinia & Sons, 18 Shinia & Co., 24 Chambers, N. Y 18 Bell futter Scorew.) Colonian Bostraw and Stachine Co., Cleveland, O 34 Bella futter Scorew.) Colonian Bostraw and Stachine Co., Cleveland, O 34 Bella futter, Moders of N. Y 18 Bell futter, Moders of N. Y 18 Bens Hights, Mo
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Barb Wire Hedge Co., 34 Canal, Chicago, Ill. Bellows, Mannyfochurer of. Bellows, Mannyfochurer of. Bellows, Mannyfochurer of. Bellows, Mannyfochurer of. Berling, Makers of. J. S. J. Phildelphia. 18 N. Y. Belling and Facking Co., 39 Fark Row. N. Y. Berling and Facking Co., 39 Fark Row. N. Y. Bird Canger. Makers of. Jeweit John. 24 Abons, Durals, N. Y. Bird Canger. Makers of. Jeweit John. 24 Abons, Durals, N. Y. Bird Canger. Makers of. Jeweit John. 24 Abons, Durals, N. Y. Bird Canger. Makers of. Jeweit John. 24 Abons, Durals, N. Y. Bird Canger. Makers of. Bird Canger. Service of the Manny of the Mann
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Barb Wire Rellows, Mansfroturers of. Bellis (selegh.) Bellis (selegh.) Bellis (selegh.) Bevin Bros. Mig. Co., Easthampton, Conn. Belling, Makers of. Alexander Wir. Jr., & Bros. Philadelphia. N. Y. Belling and Facking Co., y Fark Row. N. Y. 9 Bird Carges, Makers of. Alexander Wir. Jr., & Bros. Philadelphia. N. Y. Belling and Facking Co., y Fark Row. N. Y. 9 Bird Carges, Mansfroturers of. Becker, Mansfroturers of. Bird Carges, Mansfroturers of. Bird Carges, Mansfroturers of. Bird Part & Co., 25 Pearl, N. Y. 19 Bird Awning Fixtures. Miller Falls Co., 25 Chambers, N. Y. 19 Bill Hances, Mansfroturers of. Burt & Co., 31 Peck Silp, N. Y. 25 Billing Arackle, Makers of. Burt & Co., 31 Peck Silp, N. Y. 25 Billing Arackle, Makers of. Burt & Co., 31 Peck Silp, N. Y. 25 Providence Tool Co., Providence, R. 1. 25 Bell Catters and Pips Mach. Co., Cleveland, O., 34 Wiley & Russell, Greenfeld, Mass. Noteward Serew.) Coleman Ender Heef Stiffeners. Noteward Serew.) Coleman Ende Heef Stiffeners. Bross Halts, Makers of. N. Y. 15 Bross Halts, Makers of. N. Y. 16 Bross Halts, Makers of. N. Y. 16 Brown John & Sons, 100 John, N. Y. 2 Bross Halts, Makers of. N. Y. 3 Bross Halts, Makers of.
Bellows, Manufacturers of, Bellows, Manufacturers of, Bellius, Marco, O., Easthampton, Conn
Bella (Sleigh.) Brognande Brow, 412 N. 3d. Philadelphia. 17 N. Y. Belting and Facking Co., 57 Park Row. N. Y. Sleid (Sleigh.) Survander Brow, 412 N. 3d. Philadelphia. 17 N. Y. Belting and Facking Co., 57 Park Row. N. Y. Indeman O. & Co., 284 Pearl, N. Y. Jindeman O. & Co., 284 Pearl, N. Y. Jindema
Bird Cages, Mangrochere of, Indoman O, & Co., 849 Pearl, N. Y. Maxheimer John, 27 and 249 Pearl, N. Y. Bit Hences, Mangrochere of, Backus O, S., Erdiceport, Ct. Millers Fails Co., 24 Chambers, N. Y. Bill Hences, Mangrochere of, Backus O, S., Erdiceport, Ct. Millers Fails Co., 24 Chambers, N. Y. Bill Hences, Mangrochere of, Book Chambers, N. Y. Bill Hences, Mangrochere of, Book Chambers, N. Y. Bill Hences, Mangrochere of, Book Chambers, N. Y. Bill Hences, Co., Breek Silp, N. Y. McMillan Will H. & Bro., 118 South, N. Y. McMillan Will H. & Bro., N. Y. McMillan Will H. & Bro., N. Y. Providence Tool Co., Providence, R. I. Bolf Cutters. National Bolt and Flow Lach. Co., Cleveland, O., 34 Holis (Serew), Coleman Eagle Bott Works, Philadelphia. Boot and Shoe Heel Stiffeners. Lyon N., Albany, S. Holls (Seren, J. Y. John M. J. J. Brass Houndarders of, N. Y. Brass, Manufacturers of, Annonia Brass and Co. Beldscoper. Cons. 20 Annonia Brass and Co. Beldscoper. Cons. 20 Annonia Brass and Co. Beldscoper. Cons. 20 Brass Cooks Mgc. Co., 42 Clambers, N. Y. 31 Brass Loods Mgc. Co., 42 Clambers, N. Y. 32 Merchant & Co., co. Market st. Phila Brick Mechines. Grey Market st. Phila Brick Mechines. Grey Brick Co., 20 Walnut, Philadelphia. Miller S. F. & Son, 39 S. Pitth Phila Waterbur Brass Co., 36 Broadway, N. Y. 2 Waterbur Brass Co., 36 Broadway, N. Y. 3 Brass Hounders. Brits Mechines. Grey Brick Co., 20 Walnut, Philadelphia. Miller S. F. & Son, 39 S. Pitth Phila Butts and Hinges. American Solral Spring Butt Co., & Beckman, N. 7, 5 Brass Hounders. Brush H. D. & Co., Manket st., Phila Willer S. F. & Son, 39 S. Pitth Phila Butts and Hinges. American Solral Spring Butt Co., & Beckman, N. 7, 5 Brass Hounders. Grey Brick Co., 20 Walnut, Philadelphia. Grey Brick Co., 20 Walnut, Philadelphia. John St. School, Mangroches of. Brits Handers of.
Bird Cages, Mangrochere of, Indoman O, & Co., 849 Pearl, N. Y. Maxheimer John, 27 and 249 Pearl, N. Y. Bit Hences, Mangrochere of, Backus O, S., Erdiceport, Ct. Millers Fails Co., 24 Chambers, N. Y. Bill Hences, Mangrochere of, Backus O, S., Erdiceport, Ct. Millers Fails Co., 24 Chambers, N. Y. Bill Hences, Mangrochere of, Book Chambers, N. Y. Bill Hences, Mangrochere of, Book Chambers, N. Y. Bill Hences, Mangrochere of, Book Chambers, N. Y. Bill Hences, Co., Breek Silp, N. Y. McMillan Will H. & Bro., 118 South, N. Y. McMillan Will H. & Bro., N. Y. McMillan Will H. & Bro., N. Y. Providence Tool Co., Providence, R. I. Bolf Cutters. National Bolt and Flow Lach. Co., Cleveland, O., 34 Holis (Serew), Coleman Eagle Bott Works, Philadelphia. Boot and Shoe Heel Stiffeners. Lyon N., Albany, S. Holls (Seren, J. Y. John M. J. J. Brass Houndarders of, N. Y. Brass, Manufacturers of, Annonia Brass and Co. Beldscoper. Cons. 20 Annonia Brass and Co. Beldscoper. Cons. 20 Annonia Brass and Co. Beldscoper. Cons. 20 Brass Cooks Mgc. Co., 42 Clambers, N. Y. 31 Brass Loods Mgc. Co., 42 Clambers, N. Y. 32 Merchant & Co., co. Market st. Phila Brick Mechines. Grey Market st. Phila Brick Mechines. Grey Brick Co., 20 Walnut, Philadelphia. Miller S. F. & Son, 39 S. Pitth Phila Waterbur Brass Co., 36 Broadway, N. Y. 2 Waterbur Brass Co., 36 Broadway, N. Y. 3 Brass Hounders. Brits Mechines. Grey Brick Co., 20 Walnut, Philadelphia. Miller S. F. & Son, 39 S. Pitth Phila Butts and Hinges. American Solral Spring Butt Co., & Beckman, N. 7, 5 Brass Hounders. Brush H. D. & Co., Manket st., Phila Willer S. F. & Son, 39 S. Pitth Phila Butts and Hinges. American Solral Spring Butt Co., & Beckman, N. 7, 5 Brass Hounders. Grey Brick Co., 20 Walnut, Philadelphia. Grey Brick Co., 20 Walnut, Philadelphia. John St. School, Mangroches of. Brits Handers of.
Bit Hraces, Manyfacturer of S. Backus G. S. Erichambers, S. Backus G. S. Erichambers, S. Millers Falls Co., 24 Chambers, S. Y. Millers Falls Co., 24 Chambers, S. Y. Millers Falls Co., 24 Chambers, S. Y. Millers Falls Co., 25 Chambers, S. Y. Miller S. Co., 19 Chambers, S. Y. Miller S. Co., 19 Chambers, S. Y. Mondillan Win, H. & Bro., 113 South, Y. Y. Mondillan Win, H. & Bro., 113 South, Y. Y. Mondillan Win, H. & Bro., 113 South, Y. Y. Mondillan Win, H. & Bro., 113 South, Y. Y. Mondillan Win, H. & Bro., 113 South, Y. Y. Mondillan Win, H. & Bro., 113 South, Y. Y. Bolt Cutters. National Bolt and Pige Mach. Co., Cleveland, O., 35 Fockweil Serew and Machine Co., Cleveland, O., 35 Fockweil Serew and Machine Co., Cleveland, O., 35 Fockweil Serew and Machine Co., Cleveland, O., 37 Fockweil Serew and Machine Co., Cleveland, O., 37 Fockweil Serew and Machine Co., Cleveland, O., 38 Fockweil Serew, Co., 30 Machine, Machine Co., 42 Chambers, N. Y. Bolt Serew, Co., 30 Machine, N. Y. Bridgeport Bras and Copper Co., 40 Cliff, N. Y. Bridgeport Bras and Copper Co., 40 Cliff, N. Y. Bridgeport Bras and Copper Co., 40 Cliff, N. Y. Bridgeport Bras Co., 20 Machines, N. Y. Berchant & Co., 20 Maches, 47 Chambers, N. Y. Backet Machines. Mondillan Co., 41 Broome, N. Y. Waterbury Brass Co., 26 Broadway, N. Y. Brass Founders, Reverse State, Phila. Bridge Hallders. Moneley Iron Bridge and Roof Co., 4Dey, N. Y. Brass Founders, Machines. Moneley Iron Bridge and Roof Co., 4Dey, N. Y. Bridge and Shae Knilven, Manufacturers of Competition of the Machines. Moneley Iron Bridge and Roof Co., 4Dey, N. Y. Bridge and Shae Knilven, Manufacturers of Competition of the Machines. Moneley Iron Bridge and Roof Co., 4Dey, N. Y. Bridge and Hinges, Marchard Shae Knilven, Manufacturers of Competition of the Machines. Moneley Iron Bridge and Roof Co., 5De, N. Y. Bridge and Bro., Britanylle, Conn. 12 Cervinase Haits, Makers of Townson, William Shae Shambers, N. Y. Carriage Haits, Makers of Townson, William Shae Shae Shambers, N. Y. Carriage Machines. Boater Spring
Bilad Awning Faxinges. Joston Revet Co., 31 Feek Silp, N. Y. Momilian Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. H. & Bro., 113 South, N. Y. Pended M. H. & Bro., 113 South, N. Y. Pended M. Server and Machine Co., Cleveland, O., 35 Stockwold Screw and Machine Co., Cleveland, O., 34 Wiley & Russell, Greenfield, Bass. Holling Bayle Bolt Works, Philadelphia. Boot and Shee Heel Stiffeners. Lyon N., Albany, N. Y. Brass Butts., Maker of N. Y. Brass Butts., Maker of N. Y. Brass Hatts., Maker of N. Y. Brass Hatts., Maker of N. Y. Brass Gooth R. G. S. Clambers., N. Y. Brass Gooth R. S. Co., 34 Clambers., N. Y. Brass Gooth R. Haydens, 40 Chambers, N. Y. Manhattan Brass Co., 58 Reade, N. Y. Bender Sooth & Haydens, 40 Chambers, N. Y. Rome Fron Works. Home, N. Y. Brass Gooth R. Haydens, 40 Chambers, N. Y. Brass Hatts., Machines. Greek Fleic Co., 20 Walnut, Philadelphia. Machiners. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Maller S. P. & Sou, 39 S. Fifth Phila. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson Marcher, Marcher A. Wilson Marcher, M
Bilad Awning Faxinges. Joston Revet Co., 31 Feek Silp, N. Y. Momilian Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. Win, H. & Bro., 113 South, N. Y. Pended M. H. & Bro., 113 South, N. Y. Pended M. H. & Bro., 113 South, N. Y. Pended M. Server and Machine Co., Cleveland, O., 35 Stockwold Screw and Machine Co., Cleveland, O., 34 Wiley & Russell, Greenfield, Bass. Holling Bayle Bolt Works, Philadelphia. Boot and Shee Heel Stiffeners. Lyon N., Albany, N. Y. Brass Butts., Maker of N. Y. Brass Butts., Maker of N. Y. Brass Hatts., Maker of N. Y. Brass Hatts., Maker of N. Y. Brass Gooth R. G. S. Clambers., N. Y. Brass Gooth R. S. Co., 34 Clambers., N. Y. Brass Gooth R. Haydens, 40 Chambers, N. Y. Manhattan Brass Co., 58 Reade, N. Y. Bender Sooth & Haydens, 40 Chambers, N. Y. Rome Fron Works. Home, N. Y. Brass Gooth R. Haydens, 40 Chambers, N. Y. Brass Hatts., Machines. Greek Fleic Co., 20 Walnut, Philadelphia. Machiners. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Maller S. P. & Sou, 39 S. Fifth Phila. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson John, Shemded, England. Marcher and Shne K. Nives., Manufacturers of Wilson Marcher, Marcher A. Wilson Marcher, M
Bott 1 State Street and Pipe Mach. Co., Cleveland, O., 35 stockwell screw and Machine Co., Cleveland, O., 34 Wiley & Russell, Greenfield, Mass
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Bolts (Serew.) Coleman Eagle Bolt Works, Philadelphia. Coleman Eagle Bolt Works, Philadelphia. Boot and Shoe Heel Stiffeners. Lyon N., Albany, N
Boot and Shoe Heel Stiffeners. Lyon N. Albany, N. 7. Brass Hutts, Mode Pearl. N. 7. Brass Hutts, Mode Pearl. N. 7. Brass Hutts, Mode Pearl. N. 7. Brass Hamits, Mode Pearl. N. 7. Brass Good Mr. 7. Brass Good Mr. 7. Bridgeport Brass Co., 19 Citiff, N. Y. 2. Brass Good Mr. 7. Manhattan Brass Co., 23 Reade, N. Y. 2. Manhattan Brass Co., 23 Reade, N. Y. 2. Manhattan Brass Co., 24 Chambers, N. Y. 2. Manhattan Brass Co., 26 Broadway, N. Y. 2. Brass Founders. Bridge Brail R. Philadelphia. 5. Brick Machines. Mr. 19 Hilders. Moseley Iron Bridge and Roof Co., 5 Dey, N. Y. 3. Butcher and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Butcher and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Butcher and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Buther and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Butcher and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Butcher and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Butcher and Shee Knives, Manufacturers of, Wilson John. Sheffield. England. Butcher and Shee Knives, Manufacturers of, Butcher Myllone, Butthington, Del. Carriage Hardware, Makers of, Pinn Richard P., Wilmington, Del. Gard Ayles. Butter Myllone, Butthington, Del. Gard Ayles. Booker Spring Co., Hulton, Pa. Carelage Hardware, Makers of, Butthington, Del. Gasters. Powerly Spring Co., Hulton, Pa. Carelage Springs. Dokter Springs. Condition of the Springs.
Brass, Manufacturers of, 20, 19 C.116f, N. Y. Ansonia Brass and Opper Co., 19 C.116f, N. Y. Brass Goods Mig. Co., 42 Chambers, N. Y. Brass Goods Mig. Co., 42 Chambers, N. Y. Brass Goods Mig. Co., 45 Chambers, N. Y. Brass Goods Mig. Co., 50 Chambers, N. Y. Brass Goods Mig. Co., 50 Chambers, N. Y. Brown Con. Works, Co., 50 Chambers, N. Y. Brown Con. Works, Co., 50 Chambers, N. Y. Sovyill Min Co., 50 Market st., Phila. Plume & Atwood Mig. Co., 50 Chambers, N. Y. Sevyill Min Rehines. Greek Brick Co., 52 Walnut, Philadelphia. Brick Machines. Greek Brick Co., 52 Walnut, Philadelphia. Jiller S. P. & Son, 393 Fifth Phila. Jiller S. P. & Son, 393 Fifth Phila. Jiller B. P. & Son, 395 Fifth Phila. Jiller B. P. & Son, 395 Fifth Phila. Jiller B. P. & Son, 395 Fifth Philadelphia. Jiller B. Walnut Hinges. Hutcher and Shoe Krilven, Manufacturers of. Wilson and Hinges. Branch Hinges. Branch Hinges. Jiller B. Walnut Hinges
Brick Machines. Gregg Brick Co., 402 Walnut, Philadelphia 30 Miller S., & Son, 395 Fitth Phila 24 Bridge Hailders. Moseley Iron Bridge and Roof Co., 4 Dey, N. Y 31 Butcher and Shee Kuives. Manufacturers of. Wilson John, Sheffield. England 29 Butts and Hinges. American Soiral Spring Butt Co., & Beekman, N. Y. 55 Sabin Mr. Co., Montpeller, Y 8 Stanley From Stanley Review of. Townsend. Wilson & Anabers of. Townsend. Wilson & Hubbard. Philadelphia 22 Carringe Hairadware, Makers of. Townsend. Wilson & Hubbard. Philadelphia 26 Brith H. D. & Co., Planisville, Conn 12 Carringe Hardware, Makers of. Finn Richard P., Wilminston, Del 6 Smith H. D. & Co., Planisville, Conn 12 Carringe Springs. Dexter Spring Co., Hulton, Pa. Carringe Springs. Dexter Spring Co., Hulton, Pa. Carel A. & P. & Co., 265 S. 4th, Philadelphia 5, Casters. Phoenix Caster Co., Indianapolis, Ind 10 Caulking Frons. Carren John Machiners of. Chucks. Millbury, Mass 30 Clack Springs 30 Clack Springs 34 Conl. Miner Co., 11 Broadway, N. Y 6 Conl Machiner Co., 11 Broadway, N. Y 6 Conl Wasses. Sheoard Sidney & Co., Buffalo, N. Y 27 Coffee and Spice Mills. Sheoard Sidney & Co., Buffalo, N. Y 27 Coffee and Spice Mills. Sheoard Sidney & Co., Dringe City, N. J 6 Conn Wasses. Carry & Moen, ct. W. 27th, N. Y
Reverse Paul S., Philadelphia. Grick Machines. Griege Brick Co., 402 Wainut, Philadelphia. 30 Miller S., & Son, 39 S. Pitth Phila. 24 Bridge Hailders. Moseley Iron Bridge and Roof Co., 4 Dey, N. Y. 31 Butcher and Shee Kuives. Manufacturers of. Wilson John, Sheffield. England. 29 Butts and Hinges. American Soiral Spring Butt Co., & Beekman, N. Y. 5 Sabin Mr. Co., Montpeller, Y. 8 Sanloy Mr. Co., Montpeller, Y. 9 Sanloy Mr. Co., Malers of. 10 Carriage Hardware, Makers of. 11 Sanloy Mr. Co., Malers of. 12 Sanloy Mr. Co., Malers of. 12 Sanloy Mr. Co., Malers of. 13 Sanloy Mr. Co., Malers of. 14 Sanloy Mr. Co., Malers of. 15 Sanloy Mr. Co., Malers of. 16 Sanloy Mr. Co., Malers of. 16 Sanloy Mr. Co., Malers of. 17 Sanloy Mr. Co., Malers of. 18 Sanloy Mr. Co., Malers of. 18 Sanloy Mr. Co., Malers of. 19 Sanloy Mr. Co., Malers of. 19 Sanloy Mr. Co., Malers of. 10 Caulking Frons. 10 Caulking Mr. Co., Malers of. 10 Caulking Mr. Co., Malers of. 10 Caulking Mr. Co., Malers of. 10 Caulking Frons. 10 Caulking Mr. Co., Malers of. 10 Caulking Frons. 10
Reverse Paul S., Philadelphia. Grick Machines. Griege Brick Co., 402 Wainut, Philadelphia. 30 Miller S., & Son, 39 S. Pitth Phila. 24 Bridge Hailders. Moseley Iron Bridge and Roof Co., 4 Dey, N. Y. 31 Butcher and Shee Kuives. Manufacturers of. Wilson John, Sheffield. England. 29 Butts and Hinges. American Soiral Spring Butt Co., & Beekman, N. Y. 5 Sabin Mr. Co., Montpeller, Y. 8 Sanloy Mr. Co., Montpeller, Y. 9 Sanloy Mr. Co., Malers of. 10 Carriage Hardware, Makers of. 11 Sanloy Mr. Co., Malers of. 12 Sanloy Mr. Co., Malers of. 12 Sanloy Mr. Co., Malers of. 13 Sanloy Mr. Co., Malers of. 14 Sanloy Mr. Co., Malers of. 15 Sanloy Mr. Co., Malers of. 16 Sanloy Mr. Co., Malers of. 16 Sanloy Mr. Co., Malers of. 17 Sanloy Mr. Co., Malers of. 18 Sanloy Mr. Co., Malers of. 18 Sanloy Mr. Co., Malers of. 19 Sanloy Mr. Co., Malers of. 19 Sanloy Mr. Co., Malers of. 10 Caulking Frons. 10 Caulking Mr. Co., Malers of. 10 Caulking Mr. Co., Malers of. 10 Caulking Mr. Co., Malers of. 10 Caulking Frons. 10 Caulking Mr. Co., Malers of. 10 Caulking Frons. 10
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Butcher and Shoe Kuives, Manufacturers of. Wilson John, Shoffield, England
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Carringe Mardware, States of Committed British R. D. & Co. Flandship, Cohn
Carriage Spring Co., Hulton, Pa. Car Axles. Roberts A. & P. & Co., 265 S. 4th, Philadelphia. Gasters. Phemix Caster Co., Indianapolis, Ind. Caulking Irons. Carver John, 283 Monroe, N. Y. Carver Mon., 244 W. 25th, N. Y. Dunkar Bros., Milbury, Mass. Cushman, A. F., Hartford, Conn. Cardy Moen, 244 W. 25th, N. Y. Dunbar Bros., Bristol. Conn. Conl, Miners of. Pardee, A. & Co., 11 Broadway, N. Y. The Hoboken Coal Co., Jersey City, N. J. Conl Hods. Esterbrock Wm., 211 Cherry, Phila. Can Vases. Shebard Sidney & Co., Buffalo, N. Y. Zoffee and Spice Mills. Shebard Sidney & Co., Philadelphia, Ps. Coke. Wister Francis, 230 S. Third, Phila. Compasses and Dividers. Milbrook, N. Y. Enterprise Mfg. Co., Philadelphia, Ps. Copper. Morchant & Co., 507 Market st., Phila. Copper. Morchant & Co., 507 Market st., Phila. Corn Huskers. Chambers. Boring & Quinlan Decatur, Ill. Corn Sheliers. The Sow Haven Copper Co., 255 Pearl, N. Y. 2 Corn Huskers. Chambers. Boring & Quinlan Decatur, Ill. Corn Sheliers. Moselev Iron Bridge and Root Co., 5 Dey, N. Y. 31 Countersink. Barber D. F. 131 Washington, Boston. Crucibles, Manafacturers of. Wile, Siedel & Co., 790 Market, Phila. Grant Fan Mill and Cradle Co., Melrose, N. Y. 20 Crucibles, Manafacturers of. Boker Hermann & Co., 10 Duane, N. Y. Colletory Manafacturers of. Boker Hermann & Co., 10 Duane, N. Y. Colletory Manafacturers of. Boker Hermann & Co., 10 Duane, N. Y. Colletory Manafacturers of. Boker Hermann & Co., 10 Duane, N. Y. Colletory Manafacturers of. Boker Hermann & Co., 10 Duane, N. Y. Colletory Manafacturers of. Boker Hermann & Co., 10 Duane, N. Y. Driffing Harchies, Mosers of. Bouncer Pall and Lanterns. Haight Jos. Co., 26 Chambers, N. Y. Driffing Harchies. Moselva Iron. Haight Jos. Co., 26 Chambers, N. Y. Driffing Harchies. Haight Jos. Co., 26 Chambers, N. Y. Drop Forsi
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Casters. Phoenix Caster Co., Indianapolis, Ind
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Buck Bros., Millbury, Mass
Cushman, A. F., instructor, Comb. Clock Springs, &C. Cary & Moen, 24 W. 25th, N. Y. 3 Dunbar Bros., Bristol. Conn
Conl. Miners of. Pardee, A. & Co., 111 Broadway, N. Y. The Hoboken Coal Co., Jersey City, N. J
Call Hods. Esterbrock Wm., 311 Cherry, Phila
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Coke. Wister Francis, 210 S. Third, Phila. Companses and Dividers, Manufacturers of. temis & Call Hdw. & Tool Co., Springfield, Mass 11&25 Copper. Merchant & Co., 507 Market st., Phila
Capper. Merchant & Co., 207 Market st., Phila. 7 The New Haven Copper Co., 245 Fearl, N. Y. 2 Carp Huskers. Chambers. Bering & Quinlan. Decatur, Ill. 12 Carn Shellers. The Goulds Mfg. Co., Seneca Falls, N. Y. 2 Carn Market Iron. Moselev Iron Bridge and Roof Co., 5 Dey, N. Y. 31 Countersink. Moselev Iron Bridge and Roof Co., 5 Dey, N. Y. 31 Countersink. Barber D. F. 1321 Washington, Boston. 8 Cradles. Grain. Grant Fan Mill and Cradle Co., Meirose, N. Y. 22 Cracibles. Manufacturers of. Wile, Siedel & Co., 709 Market, Phila. 33 Catlery, Importers of. Boker Hermann & Co., 101 Duane, N. Y. 20 Clatworthy F. & W., 82 Chambers, N. Y. 10 Friedmann & Lauterjung, 14 Warren, N. Y. 10 Grailery, Manufacturers of. Burkinshaw Aaron, Pepperell, Maas. 10 Goodell Company, Antrim, N. H. John Russell Catlery Co., 30 Chambers, N. Y. 10 Mark Bros., 430 Broadway, N. Y. 10 Moriden Cutlery Co., 40 Chambers, N. Y. 10 Naugatuck Cutlery Co., 50 Chambers, N. Y. 10 Norden Cutlery Co., 40 Chambers, N. Y. 10 Naugatuck Cutlery Co., 50 Chambers, N. Y. 10 Nougatuck Cutlery Co
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Door and Gate Springs. Dunne P. R., iss Futton, N. Y. Van Wagoner & Williams, 85 Beekman, N. Y. Vos Hobart B., Fair Haven, Ct. Drilling Machines, Makers of. Thorne, De Haven & Co., Fhiladelphia. 21 Wiley & Russell Mfg. Co., Greenfield, Mass. 34 Drap Forgings. Kose Wm. & Bros., West Philadelphia Pa. 6 Merrill C. & Sons, 55 Grand, N. Y. 35 Drap Hammers. The Stiles & Parker Press Co., Middletown, Ct. 35 Drap Hammers. Beecher & Peck, New Haven, Conn. 35 Educ Taols. Makers of. Doscher M., of Chambers, N. Y. 24 Gregg M. & Son, Rochester, N. Y. Elevators, Makers of. Crane Bros. Mfg. Co., Chicago, Ill. 36 Stokes and Parrish, Philadelphia. 36 Blevator Binckers. 16 Lohigh S.S. H., Deep River, Conn. 28 Emery Wheels. Lohigh Valiev Emery Wheel Co., Weissport, Pa. 36
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The Siles & Parker Press Co., Middletown, Ct
Beecher & Feck, New Haven, Conn. 35 Edge Tools, Makers of. Doscher M., of Chambers, N. Y. 24 Gregg M. & Son, Rochester, N. Y. Elevators, Makers of. Crane Bros. Mfg. Co., Chicago, Ill. 9&34 Stokes and Parrish, Philadelphia. 34 Blevator Buckets, Illiadelphia. 34 Blevator Buckets, Illiadelphia. 34 Lunery. Jennings, S. H., Deep River, Conn. 28 Lehler Wheels. Lehler Valiev Emery Wheel Co., Weissport, Pa. 36
Howland T. F., Brooklyn, N. Y
Howland T. F., Brooklyn, N. Y
Howland T. F., Brooklyn, N. Y
Jennings, S. H., Deep River, Conn
Charge Popular Co. of Washington Nation
Schleicher Schumm & Co. Philadelphia
Schleicher, Schumm & Co., Falladelphia
Fitchburg Steam Engine CoFitchburg Mass35
Lane & Bodley Co., Cincinnati, O. 34 Forter Mfg. Co., Limited, Syracuse, N. Y. 34 Shapley & Wells, Binghamton, N. Y. 22 Wetherill Robt. & Co., Chester, Pa., 35
Equalizer. Bunger M. E. & Co., Indianapolis, Ind
Expert Factors. Jennings S. H., Deep River, Conn

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,	Frucets, Brass, Makers of, McNab & Harlin Mfg. Co., 56 John, N. Y	
	Penneta, Vada Penneta Block Works, Lockport, N. Y	
	Faucets, Self-Measuring, Makers of. Enterprise Mfg. Co., of Pa., Phils. and N. Y	I
	Files, Importers of. Carr J. & Riley, 82 John, N. Y	J
	Auburn File Works, 85 Chambers, N. Y. 8 Barnett G. & H., 41 and 43 Richmond, Phila. 8 Disston Henry & Sons. Phila. 25 Despot (T. T. & Sons. Phila. 25)	1
4	Moss F. W., & John, N. Y. Files, Manufacturers of. Auburn File Works, & Chambers, N. Y. Barnett G. & H., 44 and 43 Richmond, Phila. & 8 Disston Henry & Sons. Phila. Draper C. T. & Co., Sing Sing, N. Y. 7 Everhart James M., Scranton. Pa. Johnson & Bro., 17 Commercial, Newark, N. J. 8 McCaffrey & Bro., 1722 and 1734 N. 4th, Phila. & New American File Co., Pawtucket, R. I. 8 Nicholson File Co., Providence, R. I. 24 Paul Chas. R., Williamsburgh, N. Y. 8 Spencer J. R. & Son, Sheffield, England.	1
0	New American File Co., Pawtucket, R. I. 8 Nicholson File Co., Providence, R. I. 24 Paul Chas, B., Williamsburgh, N. Y. 8	1
6	Filters. M. & Son, Shemeid, England. 10 Filters. Monson M. C., Chicago, Ill. 12	
12	Filters. Monson M. C., Chicago, Ill. Fire Brick. Makers of. Borgner & O'Brien, Philadelphia, Pa. Borgner & O'Brien, Philadelphia, Pa. Brooklyn Clay Retort and Fire Brick Works, Van Dyke St., Brooklyn, N. Y	n
4 68	Gardner Brothers, Pittsburgh, Pa. 24 Kreischer B. & Sons, 58 Goerck, N. Y. 24 Maurer Henry, 418 East 2nd, N. Y. 24	1
2	Newton & Co., Albany, N. Y. 24 Ostrander James & Son, Troy, N. Y. 224 Perth Amboy Terra Cotta Co., Perth Amboy, N. J., 24	
2	Valentine M. D. & Bro., Woodbridge, N. J. 24 Watson John R. Perth Ambov, N. J. 24 Flint and Emery Paper and Cloth. Bacdor Adamon & Co. are Marker Phile	
9	Shanard Hawlware Co Buffalo N V	
I	Burger & Baumgard, 98 Duane, N. Y	D
4	Fossiliferous Ores. Brown T. J., Rockwood, Tenn	13
9	Foundry Facings. Paxson J. W. & Co., 514 Beech, Phila	
3.7	Friction Clutch. Smith James & Co., 137 Market, Phila	13
11	Richmond & Potts, 110 S. 4th. Phila., Pa	n
I	Furniture Springs. Carey & Moen, 234 W. 29th, N. Y. 3 Haigh Lovd J., 81 John, N. Y. 2	D
975	Lefferts Marshall, oo Beekman, N. Y	B
32	Garden Toots. Dunlap C. W. & Co., 43 Chambers, N. Y. Enterprise Mfg. Co., Geneva, Ohlo	B
35 34 14	Judson Junius & Son. Rochester, N. V.	
	Grindstones. Wood H. S. & Co., 33 West, N. Y	
13	Gunpowder, Makers of. Kneeland F. L. (Dupont) 70 Wali, N. Y	B
2 2	Handles. Makers of. Hartigan Wm. R., Burlington, Conn	1
2 2 2	Heaton & Denckla, 507 Commerce, Phila	B
7 2 2	Watbridge G. B., 103 Chambers, N. Y.	1
3	Hardware Dealers. Lioyd, Supplee & Waiton, 625 Market, Phila21 Shepard Sidney & Co., Buffalo, N. Y27	D
16	Boker Hermann & Co., 101 Duane, N. Y	10
31	American Spiral Spring Butt Co., 82 Beekman, N.Y 26 Comty Jas., 4739 Paul st., Philadelphia	13
19	Cowies Hardware Co., Unionville, Conn. 36 Day, Farrington & Co., 205 3d ave., N. Y. 36 Enterprise Mig. Co., Philia. 23	7
888	Lloyd, Supplee & Waiton, czs Market St., Phila., Pa. 21 Maitby, Curtiss & Co. 24 Reade, N. Y	
7	Phila. Novelty Mfg. Co., 8.1 Cherry, Phila	2
6	Couler, Fladler & Co., 97 Chambers, N. Y	3
2	Union Mfg. Co., 99 Chambers, N. Y	3
5	Hardware Specialties. American Machine Co., 1925 N. 4th, Phila	2
0	Harness Snaps. Covert Mfg. Co., West Troy, N. Y	1
90	Holt Hiram & Co., East Wilton, Me30 Hinges. Staniey Works, New Britain, Conn8	
3	Hog Ringers. Chambers, Bering & Ouinlan, Decatur, III	
66	Crane Bros., Mfg. Co., Chicago, Ill	
22	Hoisting Machines. Box Alfred & Co., 312 Green, Phila. Clem & Morse, 413 Cherry, Philadelphia. Harrington Edwin & Son, Philadelphia, Pa. 35	1
27	Totten & Co., Pittsburgh, Pa.	1
33	Hollow Ware, W. T. Wells, 78 Beekman, N. Y	
25	Horse Clippers.	1
7 2	Horse Nalls, Makers of. Ausable Horse Nall Co. 4 Warren, N. Y. Ausable Horse Nall Co. 4 Warren, N. Y. Spridgewater Iron Co. Bridgewater, Mass. 6 IF Nall Co., Cleveland, O. Vorgennes, Vi. 21 Northwestern Horse Nall Co., Vorgennes, Vi. 30 Saranae Horse Nall Co., Plattsburg, N. Y. 12	1
12	National Horse Nail Co., Vergennes, Vt. 21 Northwestern Horse Nail Co., Chicago, Ill. 30 Sarange Horse Nail Co., Chicago, Ill. 30	1
31	Horse Shoes, Makers of. Burden fron Works, Troy, N. Y. Bhode Island Horse Shoe Co., Providence, R. I31 Schoenberger & Co., Pittsburgh, Pa	i
8	Schoenberger & Co., Pittsburgh, Pa	,
ZE ZE	Mana d & Bro., Rockford, Ill	I
29	Houseurnishing Goods, Pierce Geo. N. & Co., Buffalo, N. Y	1
io io	Mohawk & Hudson Mfg. Co., Waterrord, N. Y. 25 Hydraulic Jacks. Dudgeon Richard, 44 Columbia, N. Y. 9 Lyon E. & Co., 470 Grand, N. Y. 9	1
6	Lyon E. & Co., 470 Grand, N. Y. Ice Cream Freezers. Bunne P. R., 187 Fuiton, N. Y. White Mountain Freezer Co., Laconia, N. H30	H
10	White Mountain Freezer Co., Laconia, N. H30 Ice Picks	1
3	Ice Picks. Weeks A. A. 82 John, N. Y	F
30	Iron Brokers. Boynton Geo. A., 70 Wall, N. Y. Boynton Geo. A., 70 Wall, N. Y. Etting Edward J., Philadelphia, Pa. Satry A. G., Pittsburch, Pa. 1ron, Charconl. Warm or Cold Blast. Quincy John W., 68 William N. Iron Commission Merchanis. 1 Now S. R. Chattanoga, Tenn. 1 Now S. R. Chattanoga, Tenn.	
16	Quincy John W., 98 William N. Y	1
6	Lowe S. B., Chattanooga, Tenn. 6 Richardson J. O., 23 Dock, Philadelphia. 4 Iron. Pig, Importers of, Williamson James & Co., 69 Wall, N. Y 4	F
21	Williamson James & Co., co Wall, N. Y. 1ron Dealers. Abeel Brothers, 10c South, N. Y. Bonnell, Botsford & Co., Youngstown, O. 4 Borden & Lovell, 7c and 7; West, N. Y. Carnichael W. J., 13c and 13z Cedar, N. Y. Cooney Daniel F., 88 Washington, N. Y. Harrison & Gillton, 581 to 502 Water, N. Y. Hoffman J. W. & Co., 208 S. Fourth, Philadeiphia. 5 Judson B. F., 457 and 456 Water, N. Y.	E
6	Borden & Lovell, 70 and 71 West, N. Y. 4 Carmichael W. J., 130 and 132 Cedar, N. Y. 4 Cooney Daniel F., 88 Washington, N. Y. 4 Harrison & Gilloon, cs. fo. co. Water, N. Y. 4	
36	Carmicinei w 150 and 132 Cedax, N. Y. Cooney Daniel F., 88 Washington, N. Y. Harrison & Gilloon, 588 to coz Water, N. Y. Hoffman J. W. & Co., 268 S. Fourth. Philadelphia. 5 Judson B. F., 57 and 56 Water, N. Y. Kanno E. F., 57 and 56 Water, N. Y. Kanno E. Gustaf, 8 Kilby, Boaton, Mass. Ozden & Wallace, 8, 87, 59 and ot Elm, N. Y. Pelerson & Co., 28 Broadway, N. Y. Pullman J. Wesley, Philadelphia, P. Quincy John W., 68 William, N. Y. Bichards D. W. & Co., 52 Mangin, N. Y. Wallace Wm. H. & Co., Albany and Washington streets, N. Y. Warner A. B. & Son, 28 and 29 West, N. Y.	E
35	Lundberg Gustaf, 35 Kilby, Boston, Mass	H
34	Quincy John W., 98 William, N. Y. Richards D. W. & Co., 92 Mangin, N. Y. Wallace Wm. H. & Co., Albany and Washington	E
34	streets, N. Y. Warner A. B. & Son, 28 and 29 West, N. Y. Williamson James & Co., 69 Wall, N. Y.	E
36	Whitney A. R., 56 Hudson, N. W	B
21	Iron, Manufacturers of. Albany & Rensselaer Iron & Steel Co., Troy N. Y28 Bradley, Reis & Co., New Castle, Pa	OD OD
6	Burden Iron Works, Troy, N. Y. Condit, Wick & Co., Cleveland, Ohio	2
35	Wallace W. H. & Co., Albany and Washington N. Y. & Co., Albany and Washington Wallace N. Y. & Wallace N. Y. & Whitney A. R., & Hudson, N. Y. & Levis & Kimball, Philadelphila, Pa. Hoffman J. W. & Co., 20 S. 4th, Phila. Levis & Kimball, Philadelphila, Pa. & Iron. Manufacturers of Albany & Rensselaer Iron & Steel Co., Troy N. Y., 28 Bradley, Reis & Co., New Castle, Pa. & Burden Iron Works, Troy, N. Y. & Condit, Wick & Co., Cleveland, Ohio. 3 Houdlette & Ellis, Boston, Mass. & Kirkpatrick, Beale & Co., Pittsburgh, Pa. & Leonard, John, 450 and 451 West, N. Y. & Yorn Chicago Rollina Mill. Co., Chicago, Ill., 29 Phoeniculti, Iron and Steel Co., Portsmouth, Ohio. 4 Roane Iron Co., Chattanooga, Tenn.	20
35	Roane Iron Co., Chattanooga, Tenn	8

0 5	The Passaic Rolling Mill Co., Paterson, N. J	
8 8	Wood W. D. & Co. Pittsburgh, Pa 4 Jack Screws. Wunder Vt.	
8857	Lanterns. Manufacturers of. Dietz R. E. (Tubular) & and & Fulton, N. Y	
000000	Lathes. Johnson. Jr. Israel H. & Co., Philadelphia31 l.eveis. Disston Henry & Sons., Philadelphia25	
4 8 0	Locks, Manufacturers of.	
4	WR. E. D. Hills in S. 8th. Philadelohia. 9 ROMER & Co., Newark, N. S. 8th. Philadelohia. 9 ROMER & Co., Newark, N. S. 8th. Philadelohia. 9 ROMER & Co., Newark, N. S. 8th. Philadelohia. 9 Romer & Co., Newark, N. J. 9 Robinson, W. S.	
444	Machinery, Makers of, Biliss & Williams, 167 Plymouth, Brooklyn. 34 Box Alfred & Co., 312 Green, Phila. 34 L. B. Flanders Machine Works, 1028 Hamilton, Phila. 32	
14	Garvin E. E. & Co., Manchester, N. H	
8	Pratt & Whitney Co., Hartford, Conn	
6	Machine Screws, Makers of, Fletcher, N. Y	
54	King I M & Co Weterford N V	
7	Wells Bros. Greenfield Mass Malieable Iron Castings, Makers of, Hammer & Co., Branford, Conn	
5 32	Mechanics' Tools, Jennings C. E. & Co., 98 Chambers, N. Y	
4	Murray Iron Works, Burlington, Iowa	
12	Dickerson, Van Dusen & Co., 29 and 31 Cliff. N. Y 2 Graves O. W. & Co., cor. Cliff and Beckman. N. Y. 4 Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2	
818	Particle Particle	
28	Ironclad Manufacturing Co., Brooklyn, N. Y21	
8	Metallurgists. Booth, Garett & Blair, 919 Chant, Philadelphia 5 Britton J. Biodgett, 339 Walnut, Philadelphia 5 Mica.	
12 38	Chester Mica & Porcelain Co., 87 Liberty, N. Y 25 Mill Gearing. Poole & Hunt, Baltimore	
17	Philadelphia Novelty Mfg. Co., 821 Cherry, Phila., 9 Miners' Caudles, Makers of. James Boyd's Sons, 10 and 12 Franklin, N. Y 6	١
19	Mineral Wool. Elbers Alexander D., 261/2 Broadway, N. Y	l
60	Mouse Traps. Dietz R. E., 54 and 56 Fulton, N. Y	
6 3 1	Noise	
9 8	Oxford Iron Co 8: Washington, N. Y. Rowland Jas. & Co., 920 N. Delaware, Ave., Phila. S Schoenberger & Co., Pittsburgh, Pa. Zug & Co., Pittsburgh, Pa. Asil Machinery. Coyne & Hatry, Pittsburgh, Pa. Pittsburgh Mg. Co., Pittsburgh, Pa. Sicket Pitters. 35 Nicket Pitters.	
300 2 7 0	Nickel Platers. Carter Edw., 22 Spring av., Troy, N. Y. Hartman John, 37% N. Seventh, Philadelphia	
8 7 8	Nickel Platers' Supplies. Condit, Hanson & Van Winkle, Newark, N. J	
15	Nuts. Bolls. etc., Makers of. Allentown Rolling Mill Co., Allentown, Pa. 5 Haskell W. H. & Co., Pawtucket, R. I. 25 Russell, Birdsall & Ward, Port Chester, N. Y. 36 Standard Nut Co., Pittsburgh, Pa. 30 Sternbergh J. H., Reading, Pa. 30	
14	Oil Stones. Boyd & Chase, 107th and Harlem River, N. Y 28 Ores. Chester Iron Co., 407 Walnut, Philadelphia 5 Read, D. W. R. & Co., 20516 Walnut, Philadelphia 5 Paint. Lake Superior Paint Co., Cleveland, Ohio	
15	Papyrographs.	
4	The Papyrograph Co., Norwich, Conn	
13	Esterbrook Steel Pen Co., New York	
6 0 11	raosphor bronze Smetting Co., 2038 Washington ave., Philadelphia	
4	Pipe Tongs. Mansfield Elastic Frog Co., New Haven, Conn	
4	Pancosat & Maule. 227 Pear. Philadelphia. 32 Pipe Tongs. Mannfeld Elastic Frog Co New Haven. Conn. 30 Pipe. Water and teas. Makers of. Wood R. & Acher, Burlington. N	
2	Planes, Manufacturers of. Stanley Rule and Level Co., 29 Chambers, N. Y10 Plated Ware. Hall, Elton & Co., 75 Chambers, N. Y.	
6	Rogers Cutlery Co. Hartford, Ct. 11 Plumbers' Materials, Manufacturers of. Carr Wm. S. & Co., 106 Center, N. Y. 30 Everhart Jas. M., Scranton, Pa. 36	
9	Plows. Columbia Plow Works, Copake Iron Works, N. Y. 32 Pocket Knives. Boker Hermann & Co., 101 Duane, N. Y	
2 0	Plows. Columbia Plow Works, Copake Iron Works, N. Y. 32 Pocket Knives. Boker Hermann & Co 101 Duane, N. Y	
4	The Stiles & Parker Press Co., Middletown, Ct. 35 Pulleys, Oesterline W., Cincinnati, Ohio. renfield Block Works, Lockport, N. Y. 25 Providence Tool Co., Providence, R. I. 32	
4	Acid Fump & Siphon Co., New London, Conn	
6 4 4	Douglas W. & B., Middletown. Conn. 7	
444	Punching Machines. Kennedy D. L., to Cortlandt, N. Y. Rails, Irou-and Steel, Makers of. Cambria Iron Co., Johnstown, Pa	
4445	Armiger R. & Son, Baltimore, Md 6	
4444	Gilmor Wm., of Wm., Baltimore, Md	
45,46	Hock Breukers. Gates & Scovill fron Works, 52 Canal, Chicago	
4 4 4 4	Rolls (Chilfed). Garrison A. & Co., Pittsburgh, Pa	
4 55	Stanley Rule and Level Co., 29 Chambers, N. Y10 Sad Irons. Enterprise Mfg. Co., Philadelphia	
8 4 4 3	Stanley Rule and Level Co., 29 Chambers, N. Y., 10 Sad I rons. Enterprise Mfg. Co., Philadelphia. 23 Sand and Emery Paper, Makers of, Raeder, Adamson & Co., 720 Market, Philadelphia. 8 Saws, Makers of, American Saw Co., Trenton. N. J., 32 Boynton E. M., 80 Beekman, N. Y., 30 Disston Henry & Sons, Phila. 25 Wheeler, Madden & Clemsen Mfg. Co., Middle-town. N. Y. Saws, Band and Scroll.	
4449	Disston Henry & Sons, Phila 25 Wheeler, Madden & Clemsen Mfg. Co., Midale- town, N. Y. 32	

crew Cutting Machinery. Wiley & Russell Mig. Co., Greenfield, Mass34	Stove Trucks. Tucker Alarm Till Mfg. Co., Indianapolis, Ind
crew Drivers, (Improved) Makers of. Disston Henry & Sons, Phila25	Tacks. American Tack Co., Fairbaven, Mass. 8 Field A. & Sons, Taunton, Mass. 9 Grundy Geo. C., 165 Greenwich, N. Y. 6
cythes. Beardslev Scythe Co., West Winsted, Conn	Grundy Geo. C. 165 Greenwich, N. Y 6
cythe Stones. Pike A. F., East Haverhill, N. H	Taps and Dies. Carpenter J. M., Pawtucket, R. I
hot, &cc.	Wiley & Russeii Mfg. Co., Greenfield, Mass 34 Tin Plate. Importers of
Sparks Thos. W., 121 Walnut, Philadelphia21 hears (Sheep).	Witey & Russell Bill, Co., Greenfield, Mass. 34 Fin Plate, Importers of N. & G. Taylor Co. Philadelphia. 3 Fin Plate, Manufacturers or Monitor Tin Plate Works, 94 Clifft, N. Y. U. S. Iron and Tin Plate Co., Pitteburgh, Pa 1 Fin Ware, Stamped and Japanned Shepard Sidney & Co., Buffalo, N. Y. 27
hears (Sheep), Hildick A. H., 12 Warren, N. Y	Monitor Tin Plate Works, 54 Cliff, N. Y
the vote and mardware Co., Cleveland, Unio35	Tin Ware, Stamped and Japanued Shepard Sidney & Co., Buffalo, N. Y
Hussey, Binns & Co. Pittsburgh, Pa	Tire Upsetters. Little Giant Mfg. Co., Millport. N. Y., Tools, Railroad and Mining. Metcaff. Paul & Co., Pittsburgh, Pa
melting Works.	Metcaif, Paul & Co., Pittsburgh, Pa
	Bruce Geo. W., 1 Platt, New York
Reeves Paul S., 760 South Broad, Phila	Bruce Geo. W., 1 Platt, New York
Vermont Snath Co., Springfield, Vt	Tubes. Deakin Robt. T. & Co., 500 N. 12th., Phila 9 Tube Expanders. Dudgeon Richard. 24 Columbia, N. Y 9
Manning & Squier, 113 Liberty, N. Y. 2 Osgood F. & Co., Bergen Port, N. J. 25	Merchant & Co., 507 Market, Phila
Rogers Cutlery Co., Hartford, Ct	Morse Twist Drill & Mach. Co., N. Bedford, Mass. 31
Carey & Moen, 234 W. 20th, N. Y	Thing. Merchant & Co., 507 Market, Phila
Rowland Wm. & Harvey, Frankford, Phila36	Ludlow Valve Mfg. Co., Troy N. Y
Babcock & Wilcox, 30 Cortlandt, N. Y	Ventilators. Bracher Ventilator Co., 3 Park Row, N. Y 25
Rowland Wm. & Harvey, Frankford, Phila 36 team Holiers. Babcock & Wilcox, 30 Cortlandt. N. Y 34 Leslie Boller Works, Jersey City, N. J 31 team Hammers, &c., Makers of, Dudgeon Richard, 22 Columbia. N. Y 9 team Pumps, &c., Manufacturers of, Cameron A. S., East 23d, N 34 Clayton Steam Pump Works, 14 and 16 Water st Brooklyn, N. Y 36 Crane Bros. Mfg. Co., Chicago, Ill 9631 Keily Wm. E., 25 Murray, N. Y 22 McGowan John H. & Co., Chichinnati, O 35 Storer G. W., 122 N. 34, Philadelphia 33 team Winder. Ramsay H. A. & Co., Baltimore, Md 21	Ventilators. Bracher Ventilator Co., 3 Park Row, N. Y
Cameron A. S., East 23d, N. Y.	Millers Falls Co., 74 Chambers, N. Y
Clayton Steam Pump Works, 14 and 16 Water st., Brooklyn, N. Y	Watchman's Time Detectors. Buerk J. E., Boston, Mass
Crane Bros. Mfg. Co., Chicago, Ill	Milers Falls Co., 74 Chambers, N. Y
McGowan John H. & Co., Cincinnati, O35 Storer G. W., 132 N. 2d. Philadelphia	Bracher Ventilator Co., a Park Row, N. Y 25
Ramsay H. A. & Co., Baltimore, Md	Wheels, Railroad, Whitney A. & Sons, Philadelphia
teel Castings, Manufacturers of.	Brooklyn White Lead Co., 89 Malden Lane, N. Y . 24
Chester Steel Castings Co., Evelina, Phila., Pa. 35 Eureka Cast Steel Co., Chester, Pa. 36 Elagg Stanley G. & Co., 216 and 218 N. 3d, Phila. 35 Pittsburgh Steel Casting Co., Pittsburgh, Pa. 35 Pratt & Letchworth Buffalo, N. V.	Brooklyn White Lead Co., 89 Maiden Lane, N. Y. 24 Coigate Robert & Co., 287 Pearl, N. Y
Pittsburgh Steel Casting Co., Pittsburgh, Pa	Lewis John T. & Bros., 231 S. Front, Phila., Pa 21
Fratt & Letchworth, Buffalo, N. Y. 36 teel importers. 2 John, N. Y. 23 Carr J. & Riley, 32 John, N. Y. 28 Hobson Francis & Son, 97 John, N. Y. 28 McCoy & Co., 194 and 185 Duane, N. Y. 10 Flerson & Co., 24 Broadway, N. Y. 28 Wolff R. H. & Co., 16 Cliff, N. Y. 28 teel (Mushet's Special.) 28 teel (Mushet's Special.) 28 teel Mushet's Special.) 28 teel Mushet's Special.) 28	Hugunin Robt. B., Wethersfield, Conn
McCoy & Co., 134 and 136 Duane, N. Y	Hammond W. S., Lewisberry, Pa
Moss F. W., & John, N. Y	Hammond W. S. E. Wisberry, Pa. Cary & Moen. 24 W. 20th. N. Y. Cary & Moen. 24 W. 20th. N. Y. Cleveland Rolling Mill Co., Cleveland, Ohlo. 28 Gautier Steel Co., Ld., Johnstown, Pa. 28 Gibert & Bennett Mg. Co., 273 Pearl, N. Y. 27 Griswold J. Wool. Troy. N. Y. 21 Haigh J. Lloyd, 81 John, N. Y. 2 Harrison Wire Co., St. Louis, Mo. 2 Howard & Morse, 45 Fulton, N. Y. 2 Lier Wm. F. Troy. N. Y. 2 Trenton 170 N. Y. 2 Trenton 170 N. Co., Holyoke, Mass 2 Trenton 170 N. Co., Holyoke, Mass 2 Trenton 170 N. Y. 2 Wire Brawing Machinery, Adt John, New Haven, Ct. 24 Wire Goods. Wanufacturers of 110 Now 13 Wire Goods. Wanufacturers of 110 Now 140
teel (Mushet's Special.)	Gautier Steel Co., Ld., Johnstown, Pa 2&28 Gilbert & Bennett Mfg. Co., 273 Pearl, N. Y., 7
teel Manufacturers.	Griswold J. Wool, Troy, N. Y
Atha, Benjamin & Co., 211 Pearl, N. Y	Harrison Wire Co., St. Louis, Mo
Forest City Steel Co., Cleveland, Ohio	Iler Wm. F., Troy, N. Y
Midvale Steel Works, Nicetown, Phila., Pa	Washburn & Moen Mfg. Co., Worcester, Mass 2
iseel Manufacthrers. Albany & Rensselner Iron & Steel Co., Troy, N. Y. 28 Atha, Benjamin & Co., 21 Pearl, N. Y. Cleveland Rolling Mill Co., Cleveland, O. 28 Forest City Steel Co., Ld., Johnstown, Pa. 26 Gauther Steel Co., Ld., Johnstown, Pa. 26 Midvale Steel Works, Nicetown, Phila., Pa. 46 Miller, Metcaff & Parkin, Pittsburgh. 28 Pennsylvania Steel Co., 28 Rowland Wm. & Harvey, Frankford, Phila. 36 Sanderson Geo. & Co., 30 Gold, N. Y. 28 Smith, Sutton & Co., Pittsburgh, Pa. 26 Singer, Nimick & Co. Pittsburgh, Pa. 26 Singer, Nimick & Co., Pittsburgh, Pa. 36 Standard Steel Works, Philadelphia, Pa. 16 Standard Steel Works, Philadelphia, Pa. 36 The Edgar Thomson Steel Co., 59 Broadway, N. Y. 20 Wardlow S. & C. Sheffield, England. 28 teet line. 28	Adt John, New Haven, Ct
Sanderson Geo. & Co., 30 Gold. N. Y. 28 Smith, Sutton & Co., Pittsburgh. Pa. 28	Dufur & Co., 36 N. Howard st., Baltimore, Md 3
Singer, Nimick & Co., Pittsburgh, Pa 6 Spencer J. R. & Son, Sheffied, England	National Mfg. Co., Boston
Standard Steel Works, Philadelphia, Pa	Wire Nails.
Wardlow S. & C., Sheffield, England28	Field A. & Sons, Taunton, Mass
steeline. Baute & Co., of Greenweh Ave., N. Y	Wire Rope, Iron and Steel, Makers of.
Cary & Moen, 234 W. 29th, N. Y	Haigh J. Loyd, 81 John, N. Y
itocks and Dies, Armstrong F, Bridgeport, Ct Holroyd E Co, Waterford, N. Y	Roebling's John A. Sons, Trenton, N. J
Holroyd & Co., Waterford, N. Y	Bemis & Call Hdw. & Tool Co., Springfield, Mass. 11&25 Coes A. G. & Co., Worcester, Mass
Wiley & Russell Mfg. Co. Greenfield, Mass34	Adt John, New Haven, Ct. Wire Goods, Manufacturers of. Dufur & Co., 46 N. Howard st., Baltimore, Md. Gilbert & Bennett Mrg. Co., 27 Feari, N. Y. 7 National Mrg. Co., Boston Oliver E., 106 and 108 Beekman st., N. Y. 3 Wire Nails. American Wins, Taunton, Mass Miller Nail Co., Covington, Ky. 30 Floid A. & Co., Ceveland, Ohlo. Wire Hope, I ren and Stevel, Makers of. Broderick & Bascom, St. Louis, Mo. 2 Haigh J. Loyd, 81 John, N. Y. 2 Hazard Mrg. Co., Wilkesbarre, Pa. 2 Roebling's John A. Sons, Trenton, N. J. 2 Wrenches, Manufacturers of. Bemis & Call Hdw. & Tool Co., Springfield, Mass. 11&25 Coes A. G. & Co., Worcester, Mass Tools L. & Co., Worcester, Mass Tools L. & Co., Worcester, Mass Tools L. & Co., Worcester, Mass Wringers, J. Boston, Mass Wringers, J. Boston, Mass Wringers, J. Boston, Mass Son Miller M. Sons, Mass Wringers, J. Boston, Mass Robeling A. & Co., Worcester, Mass Wringers, J. Boston, Mass
metal Stamping and Enameling Co., St. Louis, Mo., 21	Wringers. Alexander T. J Boston, Mass
Wiley & Russell Mfg. Co. Greenfield, Mass	
sucparu sidney & Co., Buffato, N. Y	Peerless Wringer Co., Cincinnati, O21
THOUTE (

	Tacks.	
5	Tacks. American Tack Co., Fairhaven, Mass. American Tack Co., Fairhaven, Mass. Field A. & Sons, Taunton, Mass. Grundy Geo. C., 166 Greenwich, N. Y. Taps and Dies. Carpenter J. M., Pawtucket, R. I. Carpenter J. M., Pawtucket, R. I. Wiley & Russeil MR, Co., Greenfield, Mass. Wiley & Russeil MR, Co., Greenfield, Mass. The Co., Taylor Co., Philadelphia. Tin Plante, Manufacturers or. Tin Plante, Manufacturers or.	
2	Field A. & Sons, Taunton, Mass	
9	Tana and Dies.	
	Carpenter J. M., Pawtucket, R. I 36	
1	Manning H. S. & Co., 111 Liberty, N T 13	
	Wiley & Russell Mig. Co., Greenfield, Mass 34	
T	N & G. Taylor Co. Philadelphia	
	Tin Plate. Monofacturers or. Monitor Tin Plate Works, sq. Cliff, N. Y. U. S. Iron and Tin Plate Co., Pittsburgh, Pa Tin Ware, Staumed and Japanned Shepard Sidney & Co., Buffalo, N. Y. 27	
0	Monitor Tin Plate Works, 54 Cliff, N. Y.	
	Monitor Tin Plate Works, 54 Cliff, N. Y	
5	Tin Ware, Stamped and Japanued	
	Shepard Sidney & Co., Buffalo, N. Y27	
2	Tire Upsetters. Little Giant Mfg. Co., Millport. N. Y., Tools, Railroad and Mining. Metcaf, Paul & Co., Pittsburgh, Pa	
2	Tools, Railroad and Mining.	
-	Metcaif, Paul & Co., Pittsburgh, Pa	
9	Bruce Geo. W., 1 Platt, New Yorkto	
6	Bruce Geo. W., 1 Platt, New York	
2	Tubes.	
٠,	Deakin Robt. T. & Co., soo N. rath., Phila o	
- 1	Tube ExpandersDudgeon Richard. 24 Columbia, N. Y 9	
	Dudgeon Richard. 24 Columbia, N. Y 9	
2	Tubing.	
5	Taxing Della Makers of	
	Merchant & Co., 507 Market, Phila	
	Morse Twist Drill & Mach. Co., N. Bedford, Mass. 31 Uphotsterers' Goods. Turner & Seymour Mfr. Co. 81 Reade, N. Y 7 Valves, 'tass, Water and Steam. Ludlow Valve Mfg. Co., Troy N. Y	
3	Turner & Seymour Mfg. Co. 81 Reade, N. Y 7	
8	Valves, Gas, Water and Steam.	
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5	West Reading Fipe and Mach. Works, Reading, Fa.12 West Reading Fipe and Mach. Works, Reading, Fa.12 West Positiator Co., 3 Park Row, N. Y	
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6.	Wire Drawing Machinery.	
6	Wire Goods, Manufacturers of	
8	Dufur & Co., 36 N. Howard st., Baltimore, Md 3	
6	Gilbert & Bennett Mfg. Co. 273 Pearl, N. Y 7	
0	National Mrg. Co., Boston	
5	Oliver E., 100 and 108 Beekman St., N. 1 3	
2	American Wire Nail Co., Covington, Ky29	
8	Field A. & Sons, Taunton, Mass	
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-	Broderick & Bascom, St. Louis, Mo.	
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1	Girard Wrench Mfg. Co., Girard, Pa 6	
1	National Mfg. Co., Boston. Oliver E., rós and rós Beekman st., N. Y	
8	Metropolitan Washing Machine Co., 52 Cortlands	
g	Wringers. J. Boston, Mass. Alexander T. J. Boston, Mass. Metropolitan Washing Machine Co., 52 Cortianot, N. Y. Peerless Wringer Co., Cincinnati, O. 25	
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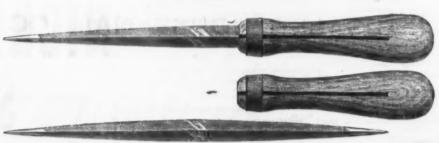
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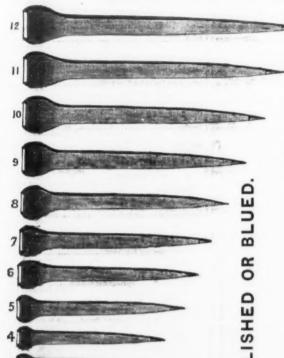
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New York V	/
Union Mfg. Co.'s Fancy Butts— cured Enameled Loose Joint	\$10 %
c'ired Enameled Loose Joint	£10 %
Loose Joint, Broad Table Butts, Back Flaps, &c. Inside Blind, Regular. Light	60 & 10 %
Light Loose Pin. Wrt. Spring Hinges American Spiral Spring Butt Co., Jap'ddis Geer's Single and Double Actingdis	25 % 10 % 25 %
Spring Hinges "American Spiral Spring Butt Co., Jap'd dis Geer's Single and Double Acting. dis Sabin Mfg. Co.'s Double Acting dis Centennial, Japanned. dis Ornamental. dis Union Spring Hinge Co.'s. dis American Spring Hinge Co.'s. dis Union Mfg. Co. dis Bommer's. dis Sommer's.	35 % 25 % 20 % 25 %
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Sarcine Scissors. \$\psi\$ doz \$\scin \cdot \text{doz}\$ dis \$\frac{1}{2}\$ (in psl'ercussion, \$\psi\$ 1000. G. D. & S. B. Double Waterproof, in \$\frac{1}{2}\$ (in \$\frac{1}{2}\$).	30°C
Colt's Pistol, Musket, 1-10 E. B. 1-10, Trimmed	050 000 000
E. B. 1-10 Ground Edge	W.W.W.
Car Pusher.—"Giant" \$6.25 each, dis at Carpet Stretchers. Cast Steel, Polished \$\psi\$ doz \$5.00, dis 30. ' Iron Steel Points \$\psi\$ doz \$2.00, dis 60.	**
Casters. dis 5 Bed. dis 5 Bed. dis 5 Bed. dis 5 Plate and Shallow Socket. dis 5 Deep Socket. dis 6 Cattle Lenders. dis 4 Hotchkies Sons dis 6 Humason. Beckley & Co.'s (low list). dis 66816 Sargent's. dis 70816	MMM
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## B. Machine dis co&to 8 ## C. S. Bits dis 40 ## Jennine's Bits dis 35 ## Tattent Solid Head dis 30 ## Russell Jennings' Auger, Dowel, Machine	Union Spring Hinge American Spring Hin Union Mfg. Co	ntal. 'Co's. lige Co's. dis dis 408 rod dis 408 rod dis dis 68 rod dis dis 68 rod dis 68 rod	dis 25 % Storehouse, (Duc's	eavy, s to 10 inches (Duc's Improv # doz \$5.50 \$10.20, 1 Patent) 12 to 17, \$12.00 @ \$20.00, 1	Hick's Pat. Solid C. S. net	# 408 2.25 dls dls dls 26 dls	Porcelain Head, T. & S. Mfg. Co. dis. Pinking Irons. # doz 75c, Piniting Machines.
Russell Jennings' Auger, Dowel, Machine- Dowel and Hand-Rail Bitsdis loktokto 5 Pussell Jennings' Augers	Blind Butts, Parker Falmer Seymour.	dis do de la constant	Genuine Chester—	Regular Nos	Heeks. Bird Cage, Sargent's lighter	ill Patterndis 20@: 8tdis 70&10@70&10& dis	Astor Plaiting Machine
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riswold's Patent Bits	" Buffalo "Sargent's. Butchers' Cleaver	08. 1, 3, 5, 40 and 45	B. & A. Emery Pap	Flour 5c n	Weston's, No. 1, McGill's, \$3.00 % Skinner's, \$6.25 Clothes Line, Hart's lis	#10.00; No. 2, #9.00 \(\pi\) dos dis 2 dos	5.5 The Stanley (S. R. & I. Co.) "dis 25&1 0.5 Bailey's "Victor" dis 25&1 0.5 Defiance Adjustable, new list dis 25&1 0.5 Plane Irons, Butcher's 85.50 t
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" Hartwell'sdis Douglass' dis 40 4 " Ves' dis 50210 5 " Orse's Bit Stock Drill, List of May 14, 78dis 25 5	Poole No. 4, French No. 5, Iron Handle Eureka	# dos #5.00. d # dos 25C. dls 1 # dos 25C. dls 1 # dos 83.75. d # dos 83.75. d # dos 83.75. d # dos 87.25, d # dos 87.25, d # gross 80. # dos 87.00. d # dos 87.00. d # dos 87.00. d	is to 5 Frary's Patent Petr Wood and Metallic West's Patent Key.	Clis 2c Clis 40 Clis 40 Clis 45 Clis 45 Clis 45 Clis 45 Clis 45	Whiffletree-Patent	Clis 40@40 Able Iron. Clis 40@40 Able Iron. Clis 70&10 Clis 70&10 Clis 30 @ 40	Russell's Parallel
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** Shouldered Peg. ** # gross 2.55—dis 15 \$	Wool	dis 29 01 ''	& 10 % Stube'. 8 20 % Butcher's. Walter Spencer & Co	\$7.00 @ 7.50 to 4.50 to 0.'s "Diamond"	Cortland P't'd & Blued. Globe (New list). \ Nos. H. P. Pointed and	, 26c 230 210 200 190 18c 5 6 7 8 9 10 d 26 23 21 20 10 180 10	Vaughan's Poat Hole— 6 in. \$23.60; 7, 8 and 9 in. \$25 per dos
				4.50 to dis 35. dis 35	£ Finished	26 23 21 20 19 18 20 26 23 21 20 19 18c Bd 25 22 20 19 18 17C Bd	Lureka dos 840.00, dis 40 Perato Parers. &C. Bay State Saratoga Peeler and Slicer. W dos 2,75 dis 10 Pruning Hooks and Slicers. Disson's Combined Pruning Hook and Saw
** Staniey's Excelsior, No. 1, \$9,60dis 2c&10 f ** No. 2, 480dis 2c&10 f ** No. 3, 7.80dis 2c&10 f ** No. 3, 7.80dis 2c&10 f ** Hed. Heavy. H. Jones & Co\$3.00 ** Bec. \$\Phi_{\text{col}}\$ \text{ Med.} \text{ Heavy.}	Cattle Leaders. Hotchkiss' Sons' Humason. Beckley & Co	et		es. \$2.50 each ne 3.00 each ne 5.00 each ne 6.00 each ne	Polished, Pat. Fin Putnam Hammer, P't'd Vulcan P't'd & Blued. Horse Shoes.—Burde	25 23 22 21 200 n 26 23 21 20 19 180 n 26 23 21 20 10 180 n en	8 Pruning Hook " 11.50, dis 20
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mmon (Guy C. Hotehkiss, Field & Co.) B 34gc iid Coilar, Case Hardened Chilled Box & 5 & 6 A xle Grease.—Fracer's & 5 & 6 e aliances & 5 & 6 9 & 41 Suring Balances dis 3348840 \$			Eureka. No. 1, 7-inch No. 2 4-inch Star	18	American ice Chisei National Novelty ice Breakers	# keg 3,37 # keg 4,37 # keg 4,37 # dos \$6.00 dis 45 # dos \$6.20 dis 25 # dos \$6.2	Trans Screw
ielia	Jack Chain, Iron	dis 40. Gis 40. Gis 60% co. Gis 54. Gis 54.	Crown Jewel, Domestic Fluter Geneva Hand Fluter, Crown Hand Fluter,	6 in., \$2.50 each net 1.50 each net No. 1	Witten Sliding Head Pi Duniap's Ring Picks Wood Head Picks, Sarge Iron	# doz #2.5c dia 40 # doz #3.0c, dia 2c # doz #1.85. dia60&10&10 # doz 1.85. dia60&10&10 # doz 1.85. dia60&10&10	
		₹ gross 50 ₹ gross 70 ₹ gross qui	Chark's Hand Fluter.		Ice Axes, Small Castor I Kitchen Ice Tongs	Maileable # doz 3.00 ne Maileable # doz 1.20 net # doz 2.27 net	Bernis & Call Co.'s Cast Steel Drive
Ank, Taylor's	** Buck B	nndis 70 dis 70 di		# dos ro.co, dis ro s	BZ ettles.	Inclusive P % 35c ne	Leach's Patent dis 14 % Eemis & Call Co 's Spring and Check dis 50 % Solid Tinners' & doz \$1.44, dis 40&10 % Dail.
ver, Sargent's, new list Dec., '78dis 60&10&1	" Firmers, Crossma	18dis 70	Reed & Barton Fruit and Jelly Enterprise Mfg. Co Fry Pans.	/-ling now list. dls 1; 5 t 3ro dls 408; 5 cash h dls 408; 5 Fresses dls 20 5	Knives. Ames' Butcher Knives Shoe Bread		It Sliding Door Wrought Brass # 10 48c dis 24 %
Hart. Biven & Mead Mfg. Co	" Withert Douglas " Corner	by Tool Co	85% No 0 1	2 3 4 5 6 7 8 4.24 4.75 5.24 6.00 7.00 8.00 9.00 ist as above	Hay and Straw— 'Wadsw Table and Pocket	Knivesdis 20 9 vorth's "dis 30 9	Raken-
w, Common Wrought			to g Gauges. Stanley	'sdis soltto %		Olwan State	Maileable
Fentucky "Star"	Adjustable, Gray's. Lamber Snow's.	's dis 400 dis	Wire	dis 35 % dis 40 % dis 45 % dis	Por. Jap'd Sa	ume discounts as Door Locks.	Badger's Emersondis 40 %
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Stamped Tinware.—New List Dec. 1, 1878. Common Stamped Ware	18 20 NT V
IRON.—DUTY: Bars, 1 to 15¢c. \$\psi\$ \$\text{B}\$; Sheet, Band Hoop and Seroil, 15¢ to 15¢c. \$\psi\$ \$\text{B}\$; provided, that none of the above iron sinall pay a less rate of duty than; per cent. Pig. \$\psi\$ \$\psi\$ to 15¢c. \$\psi\$ \$\text{B}\$; provided, that none of the above iron sinall pay a less rate of duty than; per cent. Pig. \$\psi\$ \$\psi\$ ton; Polished Sheet, 3c. \$\psi\$ so per ton. Pig. 1 ron—AMERICAN. FOUNDAMERICAN. FOU	Tir Ma File She Sav
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Twelve cents per is ext	ra for spool LLANEOUS.	ing on 1 m spool	S.
Common Plain Bress Pai	Favo		36
Brass Door Rail. High Brass Scrap.	P-het		38
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	s, 5 cents ad	vance on List	77
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Frices. Fancy Tubing to No. 20 English, Scotch and Extr	a Patterns	Fancy Tubing	
	to 4 feet lor	ig, 2 cents ad-	50
vance on List. Add to 2 cents 1/2 cent for under 2 feet.			
under 2 feet. All Mandrel Drawn Tuber	under % ir	as cents per	
pound advance.			
	TUBINGn		22
Plain Fancy Scotch and Extra Pattern			20
OKRMAN H	ILVER TUBIN	G(118 10 %	31
4 Per cent	*********		75
9 44			90
££ 66			20
18 4			35
DTEEL.—DUTY: Bars, valued at 7 cents & B., cents, and not above II, & B., and to \$ ad val. Railway Bars, in part that Metal cemented, ce Bessemer or pneumatic describion, shall be cla	Immote 6	boots and Coll	55
valued at 7 cents # D.,	or under, 24	4 cents; over,	7
wents, and not above II,	Railway B	; over 11, 3% cent ars. 1% cents # 1	.S.
Railway Bars, in part	Steel, 1 cent	Provided	1,
Bessemer or pneumatic	process, of	whatever form o	r
description, shall be cla American			
Tool		7.5	c
Spring	***********		e e
Boller Plate			č
Spring. Homogeneous. Boller Plate. Tire. Machinery (round and squ	iare)		c
Shest. Saw Plate, mill and mula gang and X cu		9	0
Saw Plate, mill and mula	y	14 @ 16 9	c
" gang and X cu	t dze		c
Best Cast		P 15 15 16	c
	ry, Cast		
"Round Machine "Swaged, Cast "Best Double She "Blister, 1st qual "Steet, Best "2d quality. "3d quality. Sheet Cast Steel, 1st qual "3dquality. ANTIMONY	ar		e
German Steel, Best	ity		1
" 2d quality		® 10c	-
Sheet Cast Steel, 1st quali	ty	# B 15560	e
mauphe "	y y		0
ANTIMONY LEAD.—DUTY Pig \$2 \(\psi\) Pipe and Sheet, 2\(\psi\) \(\psi\) American	200 Ba : 010	1 Lood 1160 B	-
Pipe and Sheet, 2%c W n		Leun, tygo w w	
American		4590 30 4940	6
Bar Pipe Tin Linea Pipe		5%c. dis to 1	1
Sheet	bron 69/a D	6e, dis 10 1	
Chilled Shot	Prop one, B	Sc, dis ro	1
BABBIT	T METAL.		- 1
N. P. U A 200; B, 160; C, 120; D	ROOT BY TO.		
TIN.—DUTY: Piates, Shee B; Elecro-galvanized Pl of, not enumerated, 35 p and Pigs free. Banca, st Banca	ts, Tagger	and Terne, 1.10 F	1
of, not enumerated, 35 p	er cont. ad.	val. Bars, Block	1
Banca Banca, st	ibject to du	b 19c	. 1
Straits		% 10 16	
TAN P	LATES.		
I C 10X14 Prime Charcoal.		\$6.25 @ 6.50	
I C 12X12 "		6.50 @ 6.75	1
14X20 Prime Charceal.	********	8,25 @ 8.50	1
Y 10X14 Prime Charceal. I X 22X12 D C 12\(\frac{1}{2}\) X 17 D X 12\(\frac{1}{2}\) X 17 For each additional X ad		5.75 @ 6.00	1
For each additional Y ad	d	7.75 @ 8.00	1
COKE TI	N PLATE.		1
no.	ad danna	iy. Orumary	1
I C 10×14 } \$5.75 I C 12×12 6.00 Prime Char.	\$.00 \$.75	6.25 @ 5.50	1
TERNE	PLATE.	3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-	1
I C 14x2e\$5.75 @ 5.00	5.50 @ 5.6234	5.00 @ 5.24	1
IX 14×20 7.50 (a) 7.75	1.50 (9 11.75	10.00 @ 11.40	1
X 20X28 @ 16.00			1
I C 14 K20 M. F. Brand	** *	\$7.37% @ 7.50	1
SOLDER	100 I. 00 (4	nd Plates, M. b.	1
1 C 16242 \$4.75 1 C 12212 6.00 Prime Char. 1 C 14220 \$4.75 1 C 14220 \$4.75 1 C 16220 7.50 1 C 16220 7.50 1 C 16220 618.75 1 C 16220 618.75 1 C 16220 7.50 1 C 16220	-201 1-419 11	11/0-11/-	1
Bergen Fort from Lehigh	Ore		1
ZINC.—DUTY: Pig or file	ock, 1.50 %	100 Bs. Sheet.	1
Now S. American, cash		614	1
Sheet, Cask Open		01/4 @ 7	1
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Paper Stock, (JIU M	mais, ac	11
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I	Rope cuttings11/4	60	3
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I	Hard White Shavings, No. 1 31/4		
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Г	Yellow Metal 10 @		716
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Paints, Oils, &c.

Paints.
Black Lamp, Coach Painters # 15 Ordinary
" Ordinary
" Ivory Drop, fair
" DOSÉ
Black Paint, in oil kegs, so asst'd cans,
Blue, Prussian, fair to best
Black Paint, in oil

y	Blue Chinese dry	1
2	" Ultramarine	Ê
3	Brown, Spanish. 14c "Van Dyke. 106612c Carming to combination price	10
B	Carmine, 40	
0	Green, Chrome	Ī
3	" in oil	F
8	Carmine, 40 Combination price	0
ï	" in oil " 30e; " 45e	G
7	ron Paint, Bright Red # 10 2%C	Ğ
3	Brown W B 1560	1
ž.	Purple. 2 b 3c	
8	Purple. F b 3c Ground in Oil, Bright Red. F b 55c	
	" Red B b 5c	L
3	" " Brown	É
		1
١,	Mineral Paints	F
	" English	FS
1	" Venetian (N. C.) dry\$1.65 @ \$1.70	2
П	" in oil asst'd cans, itc; kegs, sc	
	" Indian dry 0@ i2c	
٠	Red Lead, American Ose Coole English Ose Coole Venetian (N. C.) dry \$1.5 (e \$1.7 c	
	Burnt4%c	
9	" in oil	
3	" Raw "11 @ 15 @ 250	
.	Umber, Burnt4 @ 8c	-
	" in oil	
	" in oll	1
	Vermillion Chinese	-
1	" Englishboc, gold	0
	Trieste	11
		81
3	White Lead, American, pure dry	26
1	White, Paris, English, primein bbis. 2 @ 21/90	20
- 1	Yellow Ochre, French	20
1	Yellow Ochre, French \$1.75 in oil asst'd cans, nc; kegs, 8c " Vermont in casks 15c	36
-	Vellow Chrome	34
1	" in oil	30
	Zinc White, American No. 1, dry	
1	" French (Paris)8@ 100	
-	" in oil	-
		-
J	Oiln.	XI
1	Linseed, Raw, in casks and bbls P gal. 64c & 563	18
-1	" Boiled. " " 700 & 710	11
1	Bleached Whale	26
1	" Elephant	26
-1	Signal 440	30
- 1	Prime Lardsoc	30
. 1	No. 1 "470	34
ı	West Virginia	30
1	Empire Cylinder	-
J	Miners' Oil30 to 38e	
1	Fish Oil, pressed	D.
	Neatsfoot700	G
1	Tailow	in
1	Engine 500	(1)

Asph atum Sund				
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Glue, White				
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deliac, English				30
"Damar. " Shellac, English dark Litharge. English Mineral Wool. Pumic Stone, selected Lum				ICIN SE
Mineral Wool			9 th 154	@ 13
Pumic Stone, selected Lum	ps			.4 46
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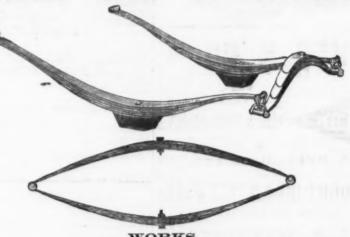
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Barnes' Adjustable Pipe Tongs.

Patented January 9, 1877.

DIPLOMA AWARDED BY THE AMERICAN INSTITUTE FAIR, AT NEW YORK, NOVEMBER, 1878. MANUFACTURED BY THE

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Shank, Socket Firmer and Socket Framing Chisels,

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Gousses of all lengths and circles beveled inside or outside. Nail Sets, Scratch and Belt Awis Caise Handles of all kinds. Carving Tools. Also small Boxes of tools of best quality.

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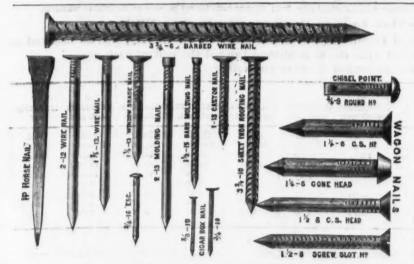


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Steel, Iron and Brass Nails and Barbed Nails Of every kind.

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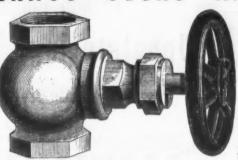
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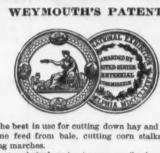
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Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the ne reaches different stations of his beat. The instrument is complete in itself, portable and as reliass the best lever watch. It requires no fixture or wires communicating from room to room, as is the with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each tion. The instrument will, in all cases, be warranted perfect and satisfactory.

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This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is given

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Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.	Taned die 15
### Per wright's, # b.gold. 10½c Peter wright's, # b.gold. 11c bet witkinson's, # b.gold. 11c bet witkinson's, # b.gold. 11c bet ####################################	Philadelphia 5 ip. 25-70; 8 in. 370; 2 dos. (Chatfield
Wikinson's, F b. gold	No. 2, Medium Jap'd 25 No. 3, Small 30
Reading No. 73	Bteve Pelish.—Gem. # gross, \$4-50, Dixon #8-00, Onyx #4-00 @
Peacn Parers. "750 net 10 00 net 15 to Favorite, cover and alleer. "7 50 net 7 50 net	Ont. #4-00 a- The Brads, &c.,—New List. dis Shoe Nails— Shoe Nails— Double Pointed Tacks Traps. dis
Lots of 10 to 25 dosen special price. A xee- Mean's Red Warrior	Double Pointed Tacks
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Watrous Ship Augers	
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Bonney Pat. Hol. Augers " \$45 "dis 25&10 a Barances Light and "Common"	Bright or Ann'A Wo 19 to 96
Belia. Bevin Bros. Mrg Co. Light Hand Beliadis 70 @ 75 & Revin Bros. Hand Beliadis 50 @ 59&10 &	Coppered to 18
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Chambers No i, for % boltt, each\$ 750 dis. 25 5	Universal, No. 214
Horing Wachines. List \$9 00 dis 40&10 g	No. 2
Angular, with Augers " 11 00 dis 40&10 \$ without Augers " 7 00 dis 40&10 \$ Neatern Carriage Bolis dis 78.8 \$-case	PITTSBURGH. Merchant Iron.
Philadelphia die 70 t Stanley, Wrought Shutter. dis 50 t Stanley, Wrought Shutter. dis 50 t 10 t 1	Wood's Patent Planished Sheet. 1st quality (A) 10 % 2d quality (B)
Backus	Plate Iron—3-16 to 34 in. thick
Butts - Cast rast Joint. Narrow dis 60&10 \$ Broad dis 53&10 \$ Cast Logic Joint, Narrow dis 70&10 \$	Nos. 14 to 20
# Acorn, Loose Fin	count, 35 to 40 %. Roofing Iron, Corrugated or Crimped.
Barances	Calvanized Common. Black. No. 20 No. 20 No. 21 & 22 Nos. 21 & 22
* Narrow, Fast	Bridge Iron. Carnegle Bros. & Co.'s list. Beams and Channels.
Billod Buttas dis 75&10 g Parker dis 75&10 g Parker dis 75&10 g Gark dis 75&1	Solid Wrought Iron Beams, 3 to 10% in. x30 ft., w
Lull & Porter	
Huffer's	to an to to the material
8-16 % 5-16 % 7-16 % % 1n. Ohisels.—Socket Framing	Equal Sided, ix: to 19(x1)(in
Custors Dea	1 In. x1 In. to 5 In. x3 In.
Coffee Mills Box and Bluedis 27 1	
Cutlery.—Walden Pocket	Nails. Fence and Brads. cod to 6cd
Goodow facturers' pricts not Brawing K nives.— Hart big Co.5. dis 63, 5&10 s Adjustable Handis. dis 20 g	
Adjustable Handie	5.15 196 "
Timed	76 in
# 605.48-00 975 425 435 500 700 900 900 No 0 1 3 4 5 6 7 8	Slating.
Tites	Clinch-All sizes
Spencer	134 " 6.15 234 " 4.40 3 " and over 6d
Utown - 15 in. roll 2 133 net 2 134 net 2 135	2.90 4d
Geneva Fluter & Sad-iron. F doz & dis 204 10 3	Cut Spikes—All sizes
Varyes & Plumb's	Boat Spikes—All sizes. Trans.—Note or acceptance at 6 days; or a di of 2 per cent. for cash, if remitted within 10 day date of invoice. An abatement of 10 cents 1 allowed upon orders of 200 kegs or over.
Harchets, dis 3844 E	date of invoice. An abatement of no cents is allowed upon orders of sockegs or over.
Binges- Straward T. Nos. 5 6 7 9 8 10 Ausable Pt dand Follshed & Pt dand Elmed and Folloted 31 38 28 25 24 23 Globe. Net l'st 25 26 21 20 19 15	Square, Flat and Octagon Tool Steel. % to 2 in
" Pollsheid & Ft dam, blued as 28 28 25 24 28 Globe	14 and 354 to 4 In
Globe	Machinery Steel—Round, 34 to 3 in
Locks and Knobs. Pranfordnew list, dis 604:1042 % cash	Allowed upon orders of zoo kegs or over. **Keel.** **Steel.** **Agricultural Steel.**
Real France	Agricultural Steels. Solid Cast Steel Plow, 4 to 16 by 3-16 to 34 in "Iron Center Plow," 4 to 16x3-16 to 34 in
# dos \$8 on 8 on 0 7 on 8 50 1 on 12 on 18 on	"Tron Back Plow," 4 to 16x3-16 to 3% in Soft Steel Center Plow, 4 to 16x3-16 to 3% in Landside and Cultivator, C. S., 3/ in. thick
No	Circular Plow Coulters, 5-32 to 34 in. thick Reaper and Scythe
Equire Candle and Oil	1 to 45% to 36 in
Lawin Mowers. Pennsylvania. dis 3 & 10 Philadelphia dis 5 & 10 Excelsion Carrier Pannage. dis 3 & 10 Lawin and Carrier Pannage. List 5.00 dis 20 g	Cornstalk Cutter beveled to length
	German, to to 16 g
Pennsylvania Petteru 9 50 © 10 00 net	Common C'st, 10 to 16 g. 8e " 17 to 20 g Rolls and Castings. Furnace, Floor and Straightening Places
Stebbins Gates dis 62 (\$10 \$ Lincoin's dis 64 (\$10 \$ L	Housings and Castings not otherwise specified Guide Plates. Spindles and coupling boxes.
Brass Liquor Cocks dis 5 g Cork Lined dis 65 g 63&10 s Plent Cutters.—Dixon's	Sand Rolls and Plaions, large size Pipe Mill Castings.
Woodrum	Spur and Bevel Wheels, large snail.
American dis 25 g Stuffers dis 25 g Enterprise Stuffers dis 25 g Enterprise Stuffers dis 25 g	over 30 inches. Engine Castings, light.
Bailey	6 to 7 in. diam., 7 to 20 in. long.
Long and Short Cutter	Common C'st, is to 16 g. Se Furnace, Floor and Straightening Plafes. Housings and Castings not otherwise specified Guide Plates. Spindles and coulting boxes. Spindles and coulting boxes. Spindles and coulting boxes. Spindles and so coulting boxes. Spindles and Pinlout, large size. Pipe Mill Castings under so ibs. Spur and Bevel Wheels, large " small Pulleys up to 30 inches. Engine Castings, light. " over 30 inches. Engine Castings, light. Chilled Rolls. 6 to 7 in. diam., 7 to 20 in. long. 8 to 15 in. 8 to 40 in. 15 to 24 in. 15 to 25 7 in. 12 24 to 31 in. 72 to 108 in. 12 24 to 31 in. 72 to 108 in. 15 10 24 in. 15 to 77 in. 12 24 to 31 in. 72 to 108 in. 15 10 24 in. 15 to 77 in. 16 24 to 31 in. 72 to 108 in. 16 25 77 in. 17 24 to 31 in. 72 to 108 in. 18 25 77 in. 18 24 to 31 in. 72 to 108 in. 18 25 77 in. 18 24 to 31 in. 72 to 108 in. 18 25 77 in. 18 24 to 31 in. 72 to 108 in. 18 25 77
Plane Treus, -Ohio Tool Co. dis 20 a 10 g Butcher A. sold a, 8 5 a Plane a and Levels. sold a, 8 5 a Plane a and Levels. sold a, 8 5 a Plane a and Levels. dis 65 a Ranley a Adjustable dis 65 a Ron-Adjustable dis 65 a Plane, -Palladelphia dis 20 g Hunt's -Palladelphia dis 25 a Runes - Elektore \$7.40, dis 25 a Runes - Elektore dis 66 a State State State dis 66 a State State State dis 66 a State dis 25 a State dis 25 a Gold	Lewis, Oliver & Phillips, discount off Standar Carriago & Tire Bolts, ordinary orders 75, & 35 Store Bolts
Picks.—Palsdeipnia . 18 20 g Hunt's . 03 25 g Pumps.—Eickford \$7.60, dis 20 10 g	Stove Bolts
Stanles - Startey 100 10 10 10 10 10 10	Stove Holts
20 dos \$5.50 7.00 9.00 10.00 11.00 15.00 15.00	Washers, all made from new band iron. So w m Nuts and Washers in 25 m boxes, 160 m m ex. and Washers in lots less than one keg each s
Lbs 50 100 130 200 25, 800	Strap and T Hinges
Equires 30 100 200 250 300	Skein Bolts. Cast Iron Washers. 34c # Fire Shovels and Pokers.
Disston's Try Squares	Wagen Hardware. Single Trees, Neck Yokes and Double Trees, from best selected hickory, and fromed compl the most approved patterns.
and Snarpelled. Cibper No. 10. Bronger Blade Boxed and Sharpesed. Sharpesed. Sharpesed. Sharpesed. Sharpesed. Sharpesed. Sharpesed. Sharpesed.	the most approved patterns. No. : Southern Flow lingle Tree, Ironed complete, Irone as Wroughteach, No. nesterns all Wroughteach, No. : Wagon Single Tree, Ironed Complete, Irone all Wrought, No. : Wagon Single Tree, Iron complete, Irone all Wrought, oxcopt Malleable For
Sharpened doz \$7°25 net	complete, Irons all Wroughteach, No. 3 Wagon Single Tree, Iron complete, Irons all Wrought, except Malleable Fer-
Baws — Dieston's Gaud, Panel and Rip	No. 4 Wason Single Tree, ironed complete, from all Wrought; Improved End Pieces
Rowland	for wheel to rub againsteach, Neck Yoke, Ironed complete, Irons all Wrought except End Ferrula, with Tr
Mrs. Potts' Farent	riveted On; one side acts as a wear iron for wheel to rub against
Sheve S and Speckes Color Colo	wagon Box Strap Bolts— For orders of 100 Set, 45\$10 \$ dia. 10 in. long by 7-16 at Screw End, \$\pi\$ act of 8 bolts
Turkey On Stone No. 1	to in. long by 7-16 at Screw End, w set of 8 bolt 12 in. 15 16 16 16 16 16 16 16 16 16 16 16 16 16
" Axe Stone " 5 6 5 kc net	10 in. 65 66 65 8 66 12 in. 65 66 66 8 66
Flat Head Irondis 60 s	14 lb. 44 64 8 44 16 18 16 16 18 16 18 16 18 18 18 18 18 18 18 18 18 18 18 18 18

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	For Fastenia We call the Brass and I in the mark plain and and bed-pla the bed-pla the bed-pla the bed-pla the call the bed-pla the call the call the call with reas screw and cheap Bolt.
	We also Goods, Drog Knobs, Plate Business Ca
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Horse Shoes, Etc	In 100	keg lo	its.	-
Juniata Horse Shees		ре	r keg	83.25 4.25
Steel Tee Calks	penin	g Ho	per 7	€c lb.
Juniata Horse Shees. Juniata Horse Shees. Mule "Roadster" pattern. Steel Tse Calks. Shoes. Thistlewood & Co.'s Self-Sharpe. Shoes. Toe Calks.	ning S	now	er Keg	5.50
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Window G				
Per Box of 40 FeetDisco	ount 75	@ 758	t10 %.	_
Single Stren	gth.			
Size.	AA.	Α.	В.	C.
6 x 8 to 10 x 14	87.50 8.60 10.75 12.25 13.00 14.50 15.00	7-75 9-75 10-75	9.75	8 5.75 6.50 7.75
30 X 50 to 34 X 50. 34 X 58 to 34 X 60. 36 X 60 to 40 X 60. Double Strength.	12.00	11.00	10.00	35
0 X 0 10 X 15	13.75 17.25 19.75 21.00 23.25 24.00 25.75	12.50 15.75 17.25 18.50 21.25 22.50 23.25 25.00 27.75	11.75 14.00 14.50 15.75 17.25 18.00 19.25 21.75 24.00	10.50
An additional to per cent. glass more than 40 inches wi inches in length and not maki inches, will be charged in the 8	will b	il size	rged f	WB 52
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Best Fine	E Co. 9	make	9				
Rooting		****			******	11	114
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For Fastening Cabinet Ware. Closet and House Doors, &c.

We call the attention of the trade to these Wrought
Brass and Iron Bolts, as being the best andeheapest
in the market. Sizes, two inches and upward, both
plain and neck bolts. Two screws fasten the bolt
and bed-plate to the wood; no others are required;
the bed-plates are made of brass, from which the
spring is cut and raised, upon which the bolt sides
with reasy, elastic movement, saving expense of
screw and producing a strong, handsome and
cheap Bolt. Price list furnished on application.

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We also manufacture all kinds of Brass and Tis
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RAMSAY & CO.,

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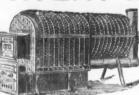
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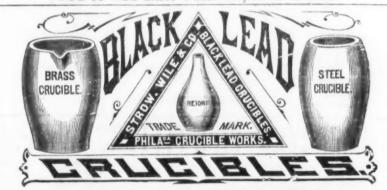
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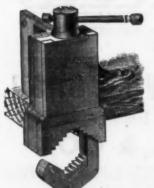




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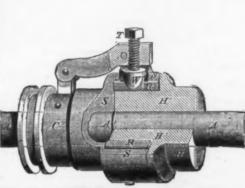
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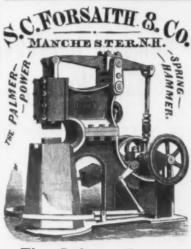
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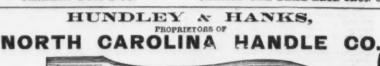


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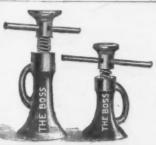
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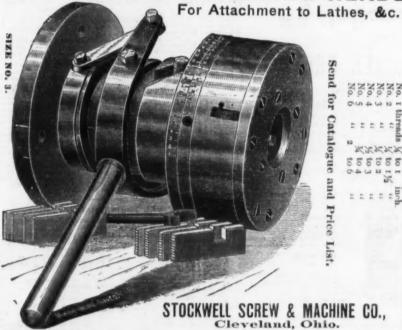
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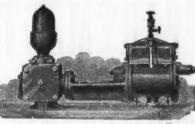
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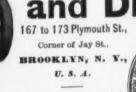
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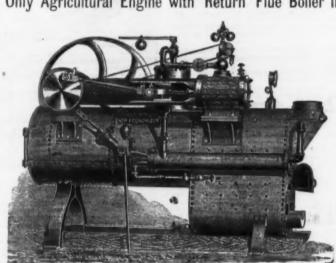


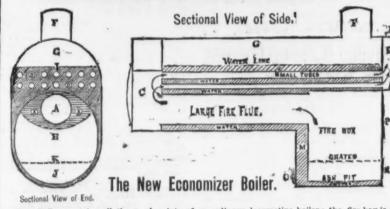
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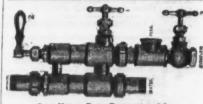


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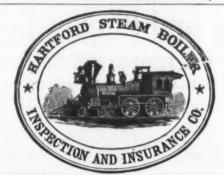
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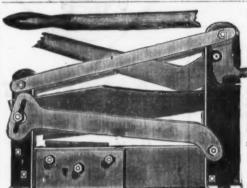
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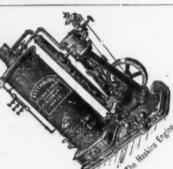
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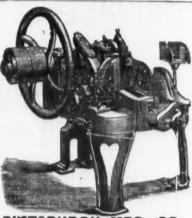
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West Mr. Thom

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